PAPER TRADE
# JOURNAL

*How to Screen Sulphite Pulps . . . p. 12*

January 1, 1954

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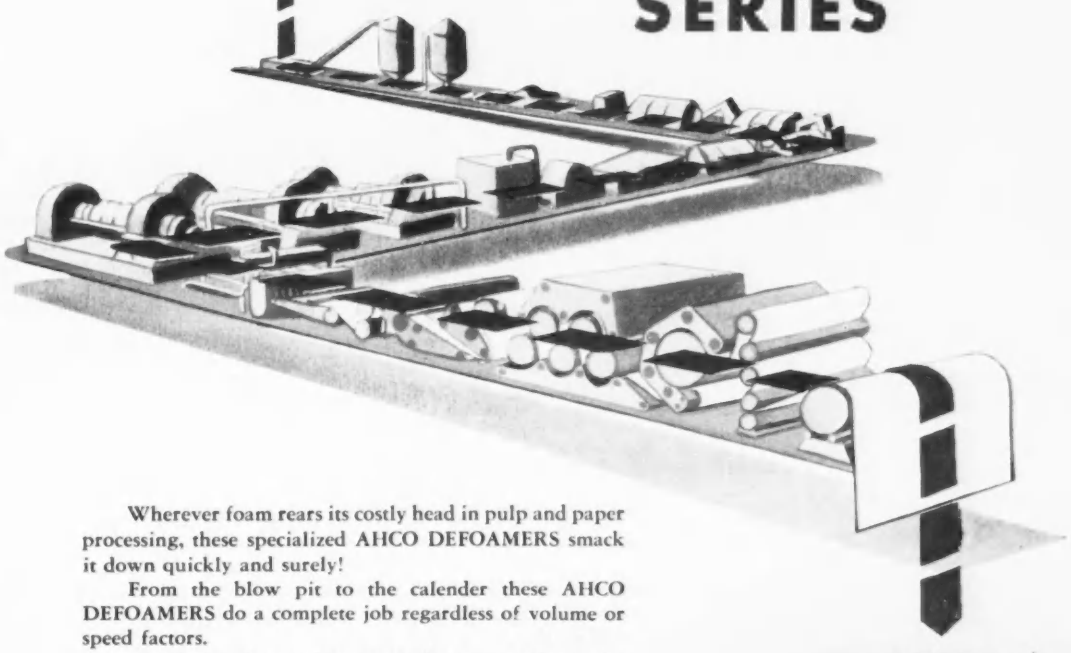

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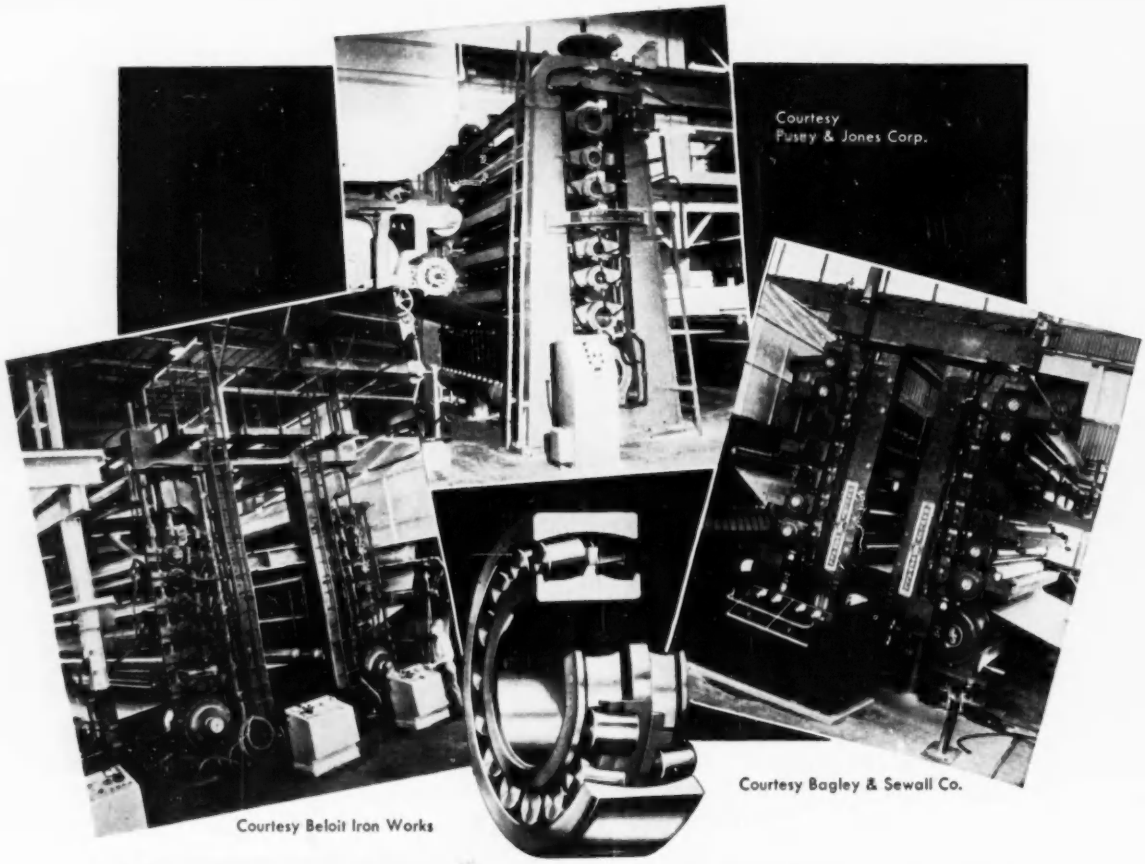


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## REMEMBER THESE DATES

*JAN. 27-29, 1954:* Technical Section Annual Meeting, C.P.P.A., Sheraton-Mount Royal Hotel, Montreal, Que.

*FEB. 14-19:* Annual Meeting, APPA, Waldorf-Astoria Hotel, New York, N. Y.

*FEB. 15-18:* Thirty-ninth Annual Meeting, TAPPI Commodore Hotel, New York, N. Y.

*JUNE 21-23:* National Meeting American Pulp and Paper Mill Superintendents Assn., Sheraton-Mount Royal Hotel, Montreal, Que.


# PAPER TRADE JOURNAL

**Published Weekly Since 1872**

JANUARY 1, 1954. *Vol. 138, No. 1*



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How to Screen Sulphite Pulp ..... 12

*Gustaf Ranhagen, project engineer for Swedish Cellulose Co., has composed this incredibly thorough analysis of pulp screening equipment—the characteristics of each machine and the results it produces.*

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*A long-time expert in industrial cutlery tells us how good knives are made and what we must do to keep them good.*

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**LOCKWOOD TRADE JOURNAL CO., INC., 15 W. Forty-Seventh St., N.Y. 36**

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# Are recession signals up?

Is the boom fading? If so, won't business gravitate more than ever to the most attractive bid?

Are you equipped to thrive on a slower, more sane, business plane? Your paper machine. Is it efficient?

In particular—your dryer section. Is it right up to snuff or is it a production bottleneck? If a bottleneck, proper condensate removal will stop that.

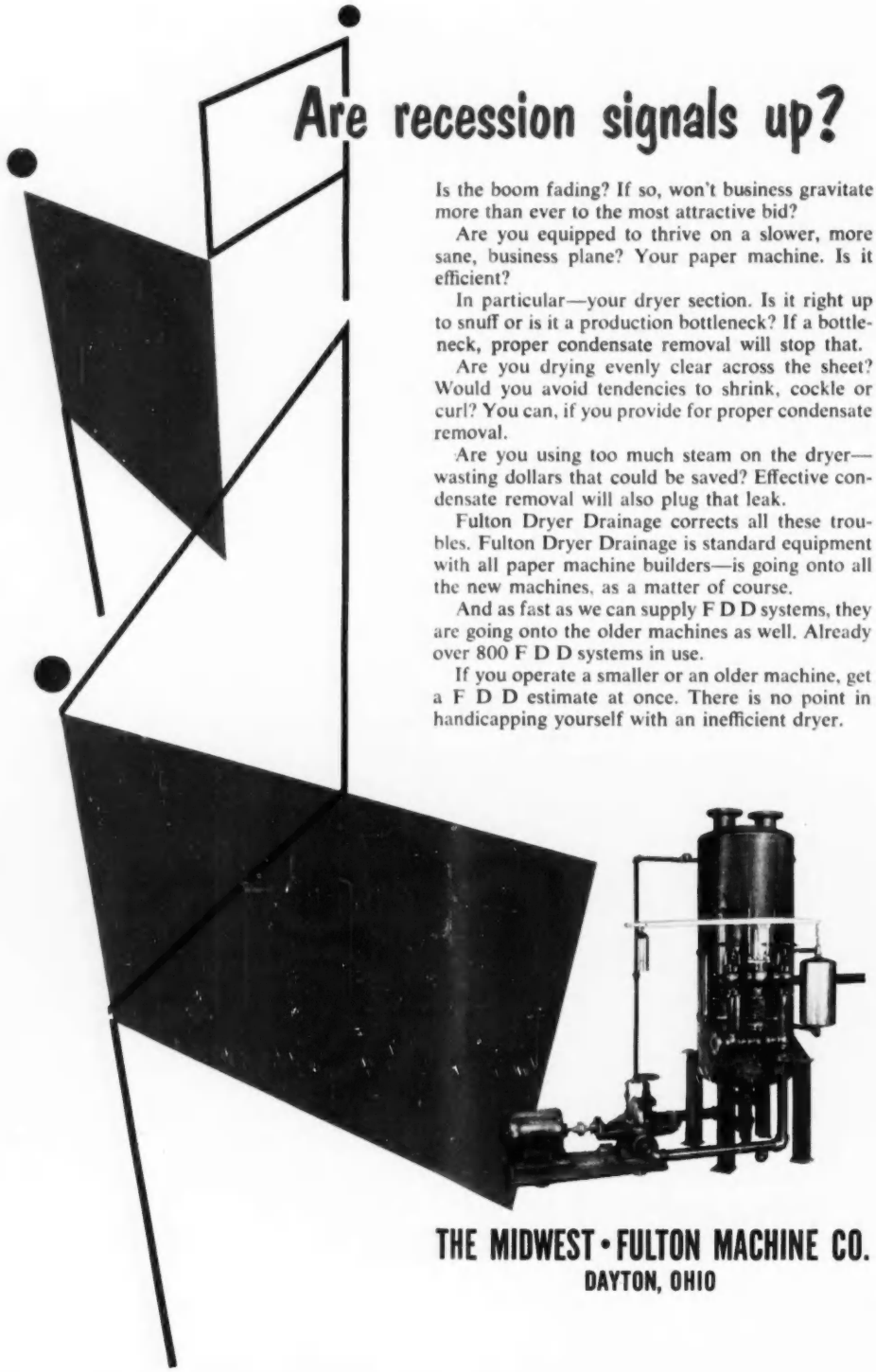
Are you drying evenly clear across the sheet? Would you avoid tendencies to shrink, cockle or curl? You can, if you provide for proper condensate removal.

Are you using too much steam on the dryer—wasting dollars that could be saved? Effective condensate removal will also plug that leak.

Fulton Dryer Drainage corrects all these troubles. Fulton Dryer Drainage is standard equipment with all paper machine builders—is going onto all the new machines, as a matter of course.

And as fast as we can supply F D D systems, they are going onto the older machines as well. Already over 800 F D D systems in use.

If you operate a smaller or an older machine, get a F D D estimate at once. There is no point in handicapping yourself with an inefficient dryer.



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**DAYTON, OHIO**

# TRENDS

PAPER TRADE JOURNAL

## Industry Outlook Is For A Good New Year

With business forecasts rolling off the presses by the bushel, the chances are that whatever your private belief, you'll be in agreement with some one or other.

This morning's batch brought published opinions of the nation's economists and executives. In the stated opinion of the top economists and statisticians, meeting at their annual forecasting session of the American Statistical Assn., the United States economy already is in a downturn. To them, 1954 holds the prospect of an *ortho:lox recession* from the extraordinary high levels of 1953. No depression is in the cards to their way of thinking, but a mild decline may continue for a year or 18 months.

**Corporation Executives Opine.** On the whole, the nation's economy is likely to hold close to the 1953 level, in the composite opinion of ranking executives of 13 of the nation's leading corporations released at the annual symposium of the Commerce and Industry Assn. of New York this week.

Applied to their respective fields of business, the summarized conclusion holds the possibility of slight dips in some sectors; in others a betterment of 1953's excellent record.

**Keen Competition Seen.** A report we liked rang the bell for its reality and agelessness.

The year 1954, said the reporter, will be one of keener competition, of rising expenses, and of slightly lower profits.

Wrote Samuel Butler of British business in 1870: "Competition is so keen and the margin of profits has been drawn so closely that virtue cannot afford to throw any bona fide chance away . . .".

Retail sales volume is expected to approximate 1953's. Selling efforts will be intensive; advertising and sales promotion will be increased; and the trend to quality of merchandise will gain, the columnist stated.

## Gloomy Forecasts A Spur To Better Effort

All of which brings to mind the pithy comment of one industry spokesman about last year's gloomy predictions. They served, he said, to spur our best efforts to keep them from being fulfilled.

The prospect is that our wish for a happy new year for the paper and board industry will be realized through the combined efforts of research, production, sales and advertising minds.

**New Products and Uses.** The year ahead will increasingly see new products marketed as the results of months of research and market development become evident.

A few of the newer ones which are hitting this market are: non-fabric, mansized handkerchiefs of triple-thick cellulose; mesh window bags for flower bulbs and hard-to-package items; frozen food shipping bags; foil-lined Brownie Mix cartons which serve as a baking pan or sheet; new brands of paper napkins, cellulose wadding, industrial wipers; duplex windshield wipers; wire and corrugated berry trays. Many more are scheduled for 1954, as well as market extensions of already established items.

**All This and More Too!** Should the paper and board industry hold the customary pattern of following the economic turn by three to four months, the performance records of the latest weeks are of special significance.

Paperboard activity for the week ended December 12 recouped from the 88 percent of the earlier week to 94; and for December 19 stood at 93, compared with 97 in the 1952 week.

Paper production stood at 94.7 in the December 12 week, at 96.5 in the December 19 week, compared with 93.8 and 95.1 respectively a year ago.

## Competitive Market For Unbleached Sulphites

First-quarter contract pulp prices had not completely jelled to press time. Canadian brands of unbleached sulphite pulps in particular were still in doubt.

Other grades hold well to the pattern reported in *Trends*, December 11 issue, viz., bleached krafts, overseas origin, are advanced $2.50 per short ton; unbleached krafts, overseas and Canadian are up $5; bleached sulphites, all sources, are as a whole unchanged; unbleached sulphites, overseas and U.S., unchanged. Canadian still doubtful. (See Market Wood Pulp—*Prices* page)

**Advance and Retreat.** There is no secret about the fact that a price lift in the sulphites is as much desired by producers as in the sulphates in view of higher costs. However, as repeatedly pointed out, on a competitive market such as today's, production costs are not the decisive factor.

In the case of the Canadian brands of unbleached sulphites, the wanted $5. was added to the $120 fourth-quarter quotation by a leading producer a week ago. Two others followed the lead; another automatically named its price at the $125. delivered basis.

By midweek, it became evident that other Canadian mills were delaying a decision for some of the overseas prices; that the Finns were waiting on the Canadians; and that consumers were resisting the $5. advance.

Market opinion here is against it because of the uncertainties of 1954's first quarter, Swedish supply and Finnish competition. Pulp agents had urged no change to their principals, it is reported.

Just before Christmas, the premature advance was withdrawn by one of its pioneers, and according to best-informed sources here, the others are likely to retreat also.

Though the price is still on the fire there is small doubt in New York pulp circles that the Canadian unbleached sulphite price will be $120 delivered during the first quarter, 1954, unchanged from current levels.

The Finnish price will be competitive with Canadian grades as usual.

**Bleached Sulphites Hold.** With the exception of Norwegian brands, the pattern is one of unchanged fourth-quarter prices, $140, freight allowed basis, (full freight for domestics, Canadian and Finnish brands; $7.50 maximum for most Swedish.)

Major Norwegian mills are quoting a $140 delivered basis for bleached sulphites. Still others which had been hoping for a price lift are dragging their feet. A $135 on dock price also is reported.

**Bleached Krafts Strong.** The $2.50 lift in overseas bleached kraft prices announced earlier is the sole change for these pulps. U.S. and Canadian primes generally are priced at $145, delivered basis. Hardwood, west coast, and special grades range from $140 to $147.50.

**Southern Krafts Firmer.** Though no rise was effected in first-quarter prices of southern unbleached krafts, the $95/100. range is much stronger.

Canadian grades have moved up $5. per ton to make the volume tonnage $105/110. Smaller output is priced at $100, also up $5. Prime eastern pulps are changed from the $125/135. level.

All overseas brands are $5 higher at $105/110 freight allowed basis.

—E.P.N.

**Paperboard Production (Tons)***

| | Dec. 19 1953 | Dec. 12 1953 | Dec. 20 1952 |
|---|---|---|---|
| Production | 241,648 | 246,855 | 242,594 |
| New Orders | 212,033 | 212,109 | 178,124 |
| Unfilled Orders | 371,487 | 402,833 | 441,859 |
| % of Activity | 93 | 94 | 96 |

* Source: National Paperboard Assn.

# Merfenel 51*

*PACKED IN ONE AND TWO OUNCE ENVELOPES

*A new Product*

FOR
SLIME CONTROL
•
MOLD PROOFING
•
PRESERVATION OF
STARCHES AND PROTEINS

## R. T. VANDERBILT CO. INC.

230 Park Avenue, New York 17, N. Y.

## Rayonier Building Small Plant For Making New Silvichemical Product

At the Grays Harbor Division of Rayonier Incorporated, Hoquiam, Wash., construction has begun on new plant facilities to produce a silvichemical, which will be in the form of a dry powder. Details on the nature and use of the powder will not be revealed until the plant is in production later this year.

The announcement was made by George A. Holt, resident manager. He revealed that "a low cost raw material now available from the pulp and paper operation will be the starting point for the new process. No additional logs will be required. Present log supply will simply be utilized more fully."

It was also said that sales of the new product will be to an industry that has never before been a Rayonier customer. If the product proves as successful as expected, it will be used all over the world.

Construction of the plant is in the hands of Rayonier Central Engineering Division, under Manager John B. Gray. Plans for full production include a study of packaging and shipping techniques that are new to Rayonier's experience.

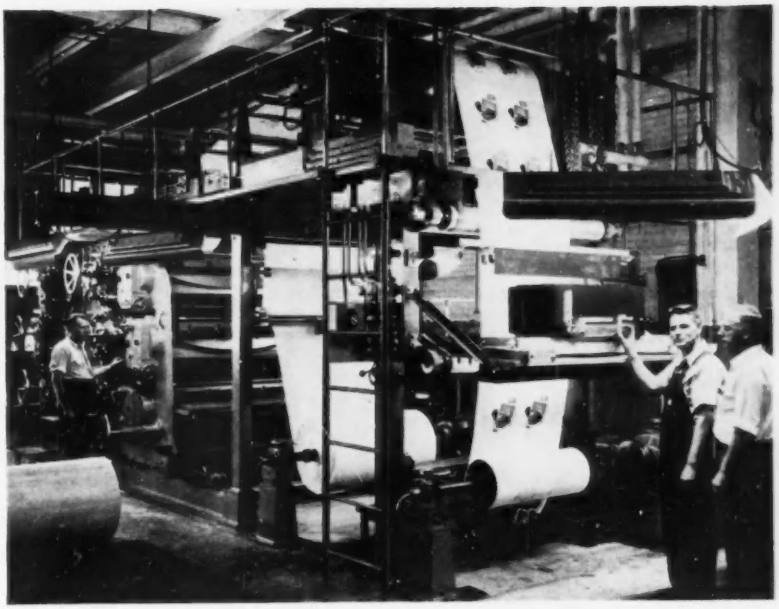
## Hearing Scheduled On Gas for Bowaters

The Federal Power Commission has set for January 12 a hearing on an application by East Tennessee Natural Gas Co., for permission to build facilities to the Bowaters Paper Corp. at Calhoun, Tenn.

ETNG proposes to supply up to nine million cubic feet of gas daily to the new plant.

## Chile Expands Its Newsprint Industry

A 12-year three hundred million dollar expansion program for the country's newsprint industry is scheduled by Chile which is planning to use the country's southern forest supplies considered sufficient to supply a newsprint and pulp market ten times larger than Chile requires.



**ROLLING UP SIX-COLOR FOOD WRAP AT 800 FEET PER MINUTE** is this new rotary letter press at Kalamazoo Vegetable Parchment Co. The press is a 32- by 52-inch Cottrell machine featuring roll feed and delivery and pre-makeready of printing plates. Tending the trial run (above) are W. Fitzsimmons, H. DeWolf, and F. Hunt. K V P also has plans for installing a new 8-color gravure press next April.

## Ohio Boxboard Establishes Scholarship Plan

Children of company employees will have an opportunity to go to college under a scholarship plan announced by Wayne Young, president of The Ohio Boxboard Co. The Ohio Boxboard Co. Foundation Scholarship Plan has been established as a significant part of the company's celebration of its 50th Anniversary.

The two winners of the yearly awards will receive $500 annually for four years while working toward any recognized academic degree. Once granted, the scholarship will continue in effect as long as designated personal and academic standards are maintained.

Any child of an employee with two years service or any child of an employee who had five years service immediately prior to death or retirement may make application for a scholarship. These candidates will be considered by a three man committee including a college educator, an independent professional or business man and a representative of the company. Winners will be selected, after testing for scholastic aptitude, on a basis of ability, character, personality and financial need.

## Charmin Supplies Free Roadbinder

Charmin Paper Mills, at Green Bay, Wis., has offered the use of its facilities to provide sulphite roadbinder for Brown County, without cost to the county.

The Northern Paper Mills division of the Marathon Corp. had been supplying the sulphite for use on county roads, but is now using it in an evaporating and burning plant.

M. J. Auchter, Charmin vice-president in charge of manufacturing, said the mill is installing storage tanks and loading docks to service county spreader trucks which lay the sulphite binder. The firm is planning to continue this expense-free service even after completion of its $2,500,000 torula yeast plant next year.

## Hennepin V.P. Comments On Tests of New Newsprint Process

A new paper making process, perfected by the Kinsley Chemical Co., Cleveland, Ohio, has been tested at the Hennepin Paper Co., Little Falls, Minn. and found satisfactory for the manufacture of newsprint paper of good quality. The process permits the use of a large percentage of poplar pulpwood in the manufacture of the Mill's product. Up to 40 percent of poplar wood has been used in the groundwood furnish and recent experimental runs at the mill made to date have totaled close to one thousand tons. The newsprint produced is of good color, cleanliness, and opacity and has fine printing qualities. The Kinsley process, whose success is attributed to the use of certain chemicals and changes in the grinding of the pulp wood, involves considerable saving in the cost of production as poplar is considerably lower in price than the regular spruce, balsam and other pulpwoods commonly used for manufacturing paper. The district, particularly in Minnesota, Wisconsin and Michigan, abounds in this hardwood pulpwood which is also fast growing. Edward R. Timolowski, a chemist and vice-president of the Kinsley Chemical Co., has been in charge of the development of the process for his company and has worked at the Hennepin Mill with L. J. Wilhorn, the mill's manager and superintendent. Forty percent poplar is the highest percentage used so far, but the mill is confident of raising this to at least 50 percent when in full production, and the manufacturing cost should be somewhat lower than regular Canadian newsprint.

The Hennepin Paper Co. mill has been manufacturing Henneprint, a "glorified newsprint," largely for shipment to the newspaper owners, who are The Cleveland Plain-Dealer, Cleveland, Ohio, The Charleston Gazette, Charleston, W. Va., The Tulsa World and Tribune, Tulsa, Okla., and the San Antonio Express and News, San Antonio, Texas. They have taken approximately 2/3 of this year's production of 15,000 tons. However, the mill is installing a Groundwood Bleachery which will be ready February 1, and at that time will make semi and full bleached papers for the printing of magazines, periodicals, and use in the paper converting field. The groundwood pulp produced from poplar is well suited for the manufacture of these grades as it makes a well formed sheet of paper with an exceptionally high finish if desired. The conversion program will require from one to two years to accomplish.

## Flambeau Ruling Considered Key in Anti Pollution Cases

The Flambeau Paper Division of the Kansas City Star, which operates a mill at Park Falls, Wis., (December 18) was ordered to submit plans for a treatment plant to stop pollution of the Flambeau River by the end of 1954 and to have the plant in operation by December 31, 1956.

In addition, the Wisconsin Committee on Water Pollution ordered the company to make a progress report by July 1, 1954, and every six months thereafter.

The decision was generally considered by observers to mean that the state committee does not consider the disposal of sulphite liquor as a roadbinder sufficient, and will demand more complete disposal of wastes the year around.

It was felt that the Flambeau case was a "key" to what the committee would do about a number of cases in which paper mills have been trying to meet state requirements by hauling sulphite liquor for highway use during road construction months and putting the waste into streams in winter.

The ruling in the Flambeau case was the result of petitions by downstream property owners, who charged that wastes from the mill had severely damaged the recreational value of the river. The paper firm, at a hearing last October, had testified that taxes and pay rolls from the mill supported the city of Park Falls, and that this outweighed the economic importance of the river as a recreation area.

Company officials said present methods of sulphite liquor treatment were too costly and more time was required to be certain of results before the firm could make a heavy investment in waste disposal facilities.

## Former Superintendent Named Receiver for Lesavoy's Newark Mill

According to a report in the Columbus, Ohio Citizen, a receivership was ordered in Common Pleas Court for Lesavoy Industries, Inc., whose plant was idled by a fire July 20, 1951, after it had been in operation less than a year.

Judge Charles B. Holtsberry granted the request for receivership filed by attorneys for an auto parts company which won a claim of $1600 in court action against the idle mill a week ago.

Assets of the company were said to be higher than the total indebtedness which includes $85,000 in mortgages and $10,000 in mechanics liens. However, a question will undoubtedly be raised, attorneys said, as to whether all of the property at the plant site is owned by the corporation or by I. Lawrence Lasavoy as an individual.

Theodore Simross, former plant superintendent when it was in operation, said that after the fire, a number of companies expressed an interest in buying the land and equipment, but that the owner declined to sell because of his own plans for eventual rebuilding. Simross has been named receiver for the corporation.

The mill began operation in the fall of 1950 and had just reached peak production when the fire destroyed a large part of the building. At that time it employed 70 persons and had a weekly payroll of some $6000 and was making paper and cardboard wrapping material.

Several letters introduced in the hearing showed there is some interest among plants in the eastern part of the country in obtaining the plant and rebuilding it.

# PEOPLE

## L. W. Shattuck Elected Strathmore V.P.

Laurence W. Shattuck, who has been general superintendent of Strathmore Paper Co., West Springfield, Mass., was elected vice-president in charge of production, a position which Cassius M. Bryan formerly held in addition to his position as Chairman of the Board.

Mr. Shattuck joined Strathmore in 1913 and has held various positions in the Order, Finishing, and Manufacturing Departments—in that order—in both the West Springfield and Woronoco mills so that he is thoroughly familiar with all phases of production. He was superintendent of No. 1 Mill at Woronoco from 1930 until 1947 when he became assistant to the vice-president in charge of production. In March 1950 he was appointed general superintendent — this being the position which he held until his current promotion.

In addition to being a director and a member of the Executive Committee of Strathmore, Mr. Shattuck is a director of the Keith Paper Co.

## Hennepin Promotes Two

Hennepin Paper Co. has appointed Louis J. Wilhorn, Little Falls, Minn. as superintendent and resident manager of the mill and Cyril H. Rausch, Office Manager.

Mr. Wilhorn has been engaged in the paper industry since 1924, starting with the Nekoosa Edwards Paper Co. He spent a number of years on the West Coast with the Hawley Pulp & Paper Co. and from there joined the Wausau Paper Mill, Brokow, Wis. as beater engineer. Mr. Wilhorn was employed by the St. Regis Paper Co. in 1946 as beater room superintendent and later general superintendent, which position he held until his recent appointment.

Mr. Rausch has been associated with the Little Falls Mill since 1944. He is a veteran of World War II and upon his discharge from the Navy, was in charge of the Laboratory at the Hennepin Mill. He was then appointed office accountant, which position he held until his recent promotion to Office Manager.

## Wright Now Superintendent At Walloomsac Division

Chris C. Wright, formerly of Case Brothers, Inc., Manchester, Conn., is now superintendent of the Columbia Box Board Mills, Inc., Walloomsac Division, Walloomsac, N. Y., which Columbia acquired a few months ago from Thomas A. Galante & Sons, Inc.

## U. S. IMPORTS OF WOODPULP

**Preliminary Figures, October, 1953**

| Item | Country of Origin | Short Tons |
|---|---|---|
| **Mechanical** | | |
| Unbleached | Canada | 11,426 |
| | Sweden | 1,747 |
| | Finland | 3,844 |
| | | 17,017 |
| Screenings | Canada | 339 |
| Bleached | Canada | 8,123 |
| | Sweden | 1,066 |
| | Norway | 559 |
| | | 9,748 |
| **Chemical** Wood Pulp | | |
| Sulfite, Unblchd. | Canada | 20,888 |
| | Sweden | 4,957 |
| | Finland | 3,715 |
| | Austria | 58 |
| | | 29,618 |
| Screenings | Canada | 270 |
| | Sweden | 214 |
| | | 484 |
| Sulfite, Blchd. Rayon & Special Chem Grades | Canada | 24,125 |
| Other | Canada | 23,056 |
| | Sweden | 2,031 |
| | Norway | 1,362 |
| | Finland | 446 |
| | Austria | 1,357 |
| | | 28,252 |
| Sulfate, Unblchd. | Canada | 12,402 |
| | Sweden | 3,068 |
| | Finland | 3,834 |
| | Norway | 33 |
| | | 19,337 |
| Sulfate, Blchd. | Canada | 42,883 |
| | Sweden | 8,374 |
| | France | 11 |
| | | 51,268 |
| Soda, Blchd. & Unblchd. | Canada | 3,726 |
| Totals, October | Canada | 147,238 |
| | Sweden | 21,457 |
| | Finland | 11,839 |
| | Norway | 1,954 |
| | Austria | 1,415 |
| | France | 11 |
| | | 183,914 |

## Collisson Becomes Olin Vice-President

N. H. Collisson of Pisgah Forest, N.C., has been appointed a vice-president for operations of Olin Industries, Inc. Mr. Collisson will assist executive vice-president F. S. Elfred in the administration of the Film, Paper, Forest Products, and Electrical Divisions.

Mr. Collisson was formerly general manager of the cellophane division at Pisgah Forest.

## Sibley Elected to Rayonier Board

Directors of Rayonier Incorporated have elected John A. Sibley of Atlanta, Ga. to the board of directors.

Widely known through legal and financial circles in the South, Mr. Sibley is Chairman of Board of the Trust Co. of Georgia at Atlanta.

Mr. Sibley fills a board chair left vacant by the death of William Tudor Gardiner, killed in an airplane crash last August.

## Fred Sievers Retires

After 44 years of service to Crown Zellerbach Corp., Fred Sievers has retired from active employment with the company. His latest position was groundwood superintendent and technical advisor for the sulphite mill at C-Z's Camas, Wash., plant. At one time or another, Mr. Sievers has visited every division of Crown Zellerbach on technical business.

## Long Joins Blandy

Vincent A. Long has joined the staff of Blandy Paper Co. in a technical capacity. Mr. Long comes to the company with wide experience gained in the specialty field from work with Port Huron Sulphite Co., Rochester Paper Co., and as consultant for smaller paper companies in the midwest. He will be in charge of technical control in the development of new papers in the specialty field.

## Paterson Parchment Promotes Two Jameses

E. R. Leonhardt, president of Paterson Parchment Paper Co., Bristol, Pa., reports that James Ross has been made assistant superintendent of the printing department and that James Chichester has been promoted to supervisor of the sales correspondence staff.

## Former I. P. Manager Now With Schiffenhaus

Robert D. Maffitt, formerly manager of the Whippany, N. J., plant of International Paper Co., has been appointed the general sales manager for Schiffenhaus Bros., a corrugated container firm in Newark, N. J.

# How to Screen Sulphite Pulp[1]

**Gustaf Ranhagen**

Project Engineer, Swedish Cellulose Co., Sund-Skonviks Verkstader, Sundsbruk, Sweden.

**We are very pleased to reproduce this Swedish article on pulp screening—theory and practice. Although the text refers specifically to sulphite pulp, the points brought out are equally applicable to all types of chemical pulps and in a lesser degree to groundwood.**

## Screening Equipment and Symbols

The different screening equipment may be divided into groups according to their construction and method of operation. A general nomenclature as support for this paper is seen in *Figure 1*. They are the same symbols used by B. Steenberg, complete with notations, in order to get a code which is used in all diagrams.

### Group A

The low-frequency vibratory screens, the nearest equivalent to flat screens of different types, are still the ones most used, usually working at 0.20-0.30% consistency.

The rotary low-frequency vibratory screens are chiefly used as knotting screens, but also as pre-screens.

### Group B

The high-frequency vibratory screens of flat or rotary types have been developed in Sweden and are characterized by screening at high consistency. They have a relative high capacity per unit of screening area, low power consumption and need little space.

Common to all screens in group A and B is the negative property that they cannot effectively remove flat or filamentous impurities with a thickness of the same or less than the slot width. Capacity decreases rapidly at smaller slot widths, e. g. to a half, when the slots are reduced from 0.35 mm to 0.25 mm and still faster by further reduction, when capillary forces begin to work.

A screening system with only these types of screens and with very fine slots in all screens therefore becomes very large. Unfortunately the cleanliness of the pulp does not increase in direct proportion to the decrease in slot width. Constant uniform feed are more important to the cleanliness of the pulp than fine slot widths.

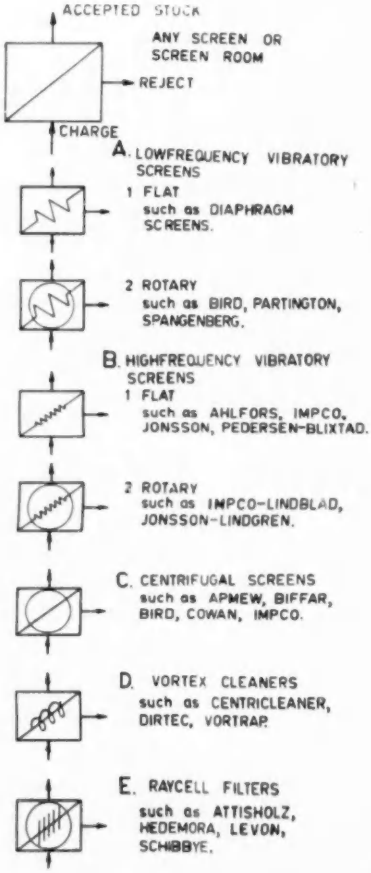



Figure 1

### Group C

Modern centrifugal screens are characterized by their ability to separate shives and filament impurities effectively. On the other hand, they let through spherical impurities of the same size as the size of perforations. However, some of these smaller impurities might be separated by these screens if a suitable consistency for pulp screening is maintained with proper load and overflow, i.e. proper conditions are maintained so as to keep the screening area covered with a filtering mat of fibers. The formation of this mat is of more importance to screening results than is the choice of size of perforation.

Using equipment with an axial pass, such as the Biffar or Cowan, the amount of short fibers in the screened pulp is greatest at the inlet and decreases at the discharge end and the opposite is true with regard to long fibers. The main part of the ray cells pass through the first third of the screen plates.

Illustrating the importance of the filtering mat is the fact that under special conditions the accepted pulp may be just as clean at the discharge end as at the inlet end with the same perforations. A negative property is that the impurities are easily broken to pieces by the way the screen works. Characteristic of the screens in this group is the defibering effect.

### Group D

Vortex type separators of modern design are taking over more and more the role of rifflers in separating heavier

[1]Paper read at the annual meeting of The Swedish Assn. of Pulp and Paper Engineers March 20, 1953. From *Svensk Papperstidning*, Vol. 56 (1953)nr.15 (15 Aug.).

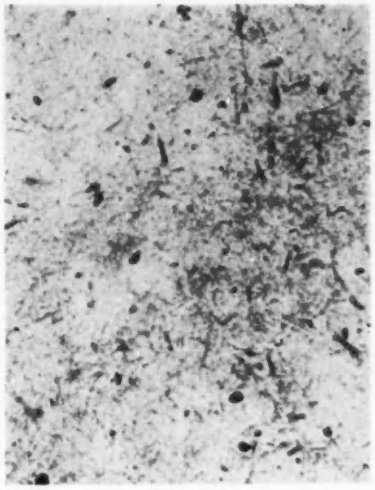


Figure 2

particles. Ordinary rifflers have a very low efficiency at consistencies over 0.5 per cent. The vortex separators such as Vortraps, Dirtecs and Centri cleaners, separate a considerable part of dirt characterized as shives and bark. This ability is increased if the equipment is run with free vortex. A free vortex is obtained if the equipment is given a free outlet. The vortex cleaners should be located as early as possible in the screening system, in order to unload the screening equipment following, thus increasing its capacity and screening results and reducing wear. Also the breaking up of the dirt into smaller particles that cannot be separated is eliminated.

### Group E

Fractionating apparatus form a special group, the first purpose of which is to separate the resin (pitch) carrying ray cells. The risk of concentrating dangerous pitch in the subsequent treatment decreases with such a fractionation, the brightness of the unbleached pulp is increased and the Roe number is decreased. The equipment referred to is based on the pulp suspension being forced against a fine wire cloth at high pressure so that most of the free ray cells are forced through the wire cloth and separated. Flotation has been tried in this connection.

In *Table I* you will find compiled the important characteristics and capacities of these types of screening equipment. The figures are naturally intended only as a guide.

### Impurities

In the figures below, some typical impurities are shown in connection with the above mentioned screens. A typical picture of impurities passing perforated plates in centrifugal screens is shown in *Figure 2*. They are in the majority of cases of more or less spherical shape.

A representative picture of the impurities passing slotted-plate-type screens (flat or rotary, low or high frequency screens) are shown in *Figure 3*. The impurities are principally of shive or sliver type.

In *Figure 4* is shown the part of bark nearest to a knot, consisting of rows of short parenchymatic cells, often brittle and easily broken by rough treatment. The figure also shows the origin of this dirt—a part of an inward grown knot together with inward grown bark. If such a piece passes over a screening plate, it may, under conditions of heavy flow, avoid following the pulp, and may be oriented to the prevailing plane and follow the rejects.

The top photo in *Figure 5* shows a shive from the inner layer of the knot and the lower one from the wood part surrounding the knot. These two kinds

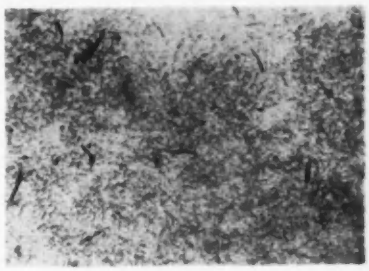


Figure 3

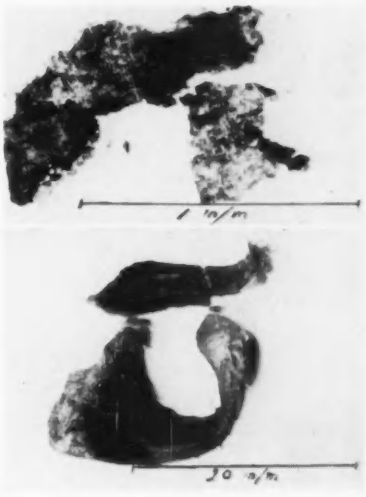


Figure 4

**TABLE I**

| | | a | b | c | d | e | f | g | h | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Capacity tons pr m² screen area/ 24 h | Separates best | Consistency accepted stock, % | Space requirement m²/ton | El. power consumption kwh/ton | Water spray cleaning direction | Water content of accepted stock ton/ton pulp | Number of vibrations or pulsations | |
| A 1) | Low frequency flat screens | 2 | Spherical particles | 0,2-0,3 | 1,0 | 6 | From outside to accepted side | 400 | 200–400 | Slots 0,35mm |
| A 2) | Low frequency rotary screens | | | | | | From accepted side to outside | | | Slots 0,35mm |
| B 1) | High frequency flat screens | 8 | Spherical particles | 0,6-0,8 | 0,5 | 6,5 | From accepted side to outside | 125–170 | 1400 | Slots 0,35mm |
| B 2) | High frequency rotary screens | 16 | Spherical particles | 1,5-2,0 | 0,15 | 7,5 | From accepted side to outside | 50–65 | 1400 | Slots 0,35mm |
| C) | Centrifugal screens ϕ 1,4, 1,4, 1,2 | 8-10 (More if shorter drum) | Shives and long particles | 0,5 | 0,20 | 20 | ..... | 200 | Biffar & Cowan ca 1400 by means of impeller blades | |
| D) | Vortex Cleaners | | Sand and particles with high sp. gravity | 0,5 | | 25-30 | ..... | 200 | | |
| E) | Raycell Filters | | Fines as raycells, clay, ink, etc. | 0,3-0,5 | | 1 | ..... | 100 | | |

of shives may, to a certain extent, be avoided through a gentle separation.

Typical shives from the outer bark are seen in *Figure 6*. The top one is more digested than the lower one. They are of a more or less spherical shape, are often easily broken and difficult to separate with perforated plates in centrifugal screens. Slotted plate type screens are advisable.

In *Figure 7* are shown typical bast fibers, the top one is very thin and quite long, the lower one more spherical. The top one may be difficult to separate with slotted plates. Easily broken spruce fibers with transverse ray cells from burnt chips are seen in *Figure 8*. Here the same thing is true as stated about the bark pieces from inward grown bark in *Figure 4*.

A typical shive with transverse ray cells is shown in *Figure 9*. Shives from tannin impregnated sapwood have this appearance. Centrifugal screens are suitable for this kind of impurity. The top figure shows a filament impurity from bast.

*Figure 10*. This type of shive is quite common, and is caused by the armellaria fungus. The wood tissued by a "mycelium", the cooking acid is prevented from penetrating the chips and digesting them. These shives are quite easily broken up by severe treatment of the pulp.

*Figure 11*. Rosin filled ray cell. The lower figure shows ray cells in a pulp suspension that are easily separated with fractionating apparatus. The ray cells, for the most part, follow the pulp in the first zone in those screens having axial pulp flow.

*Figure 12*. The separation of ray cells may avoid the growth to a good extent of these rosin particles in the following processes. The top photo shows unbleached pulp, the lower one bleached.

*Figure 13*. A fraction from the fractionating apparatus. Note the darker ray cells, shives and dirt.

In *Figure 14* is seen a filled fiber representing an impurity, which is hardly separated with screening equipment, owing to its similarity to the fibers in length and thickness. Perhaps the specific gravity may be a little different from the other fibers, which would make it possible to separate or reduce the numbers of these with a vortex separator.

*Figure 15*. The top figure shows cells from the outer birch bark, the lower one, a piece of skin from the outer birch bark, they are very thin, about 0.02 mm thick. With a long stay in screens of type A and B they are difficult to separate even with the finest slots. This type of impurity occurs also in spruce and other kinds of wood.

## Screenability

The screenability of different pulps varies. A well known fact is that a pulp containing much sapwood, i.e. with a greater fraction of long stiff fibers is

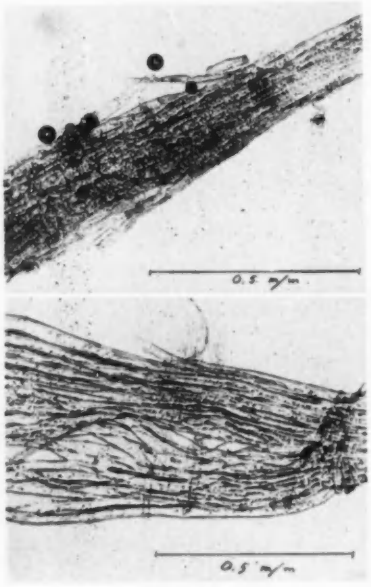



Figure 5

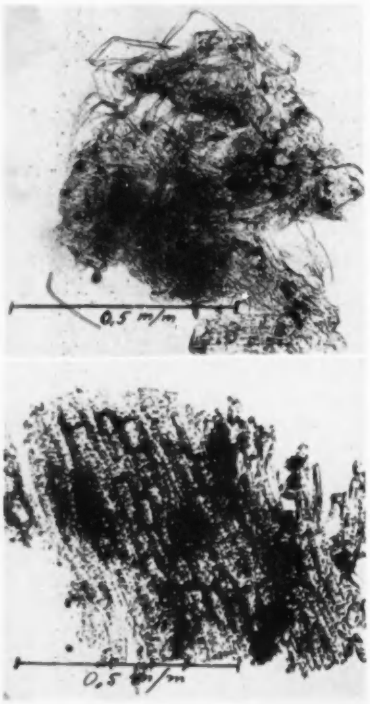



Figure 6

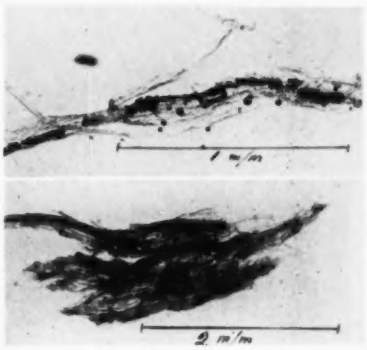



Figure 7

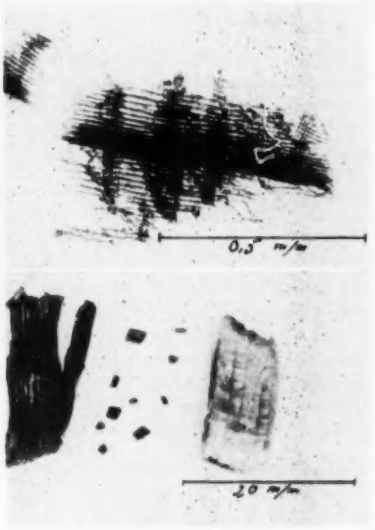



Figure 8

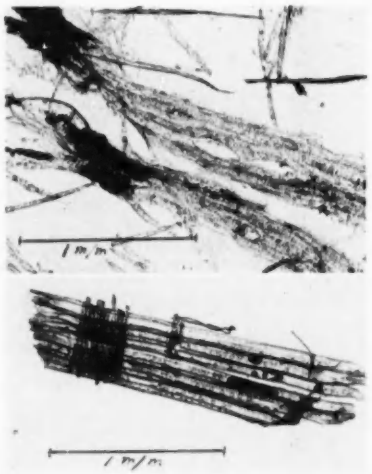
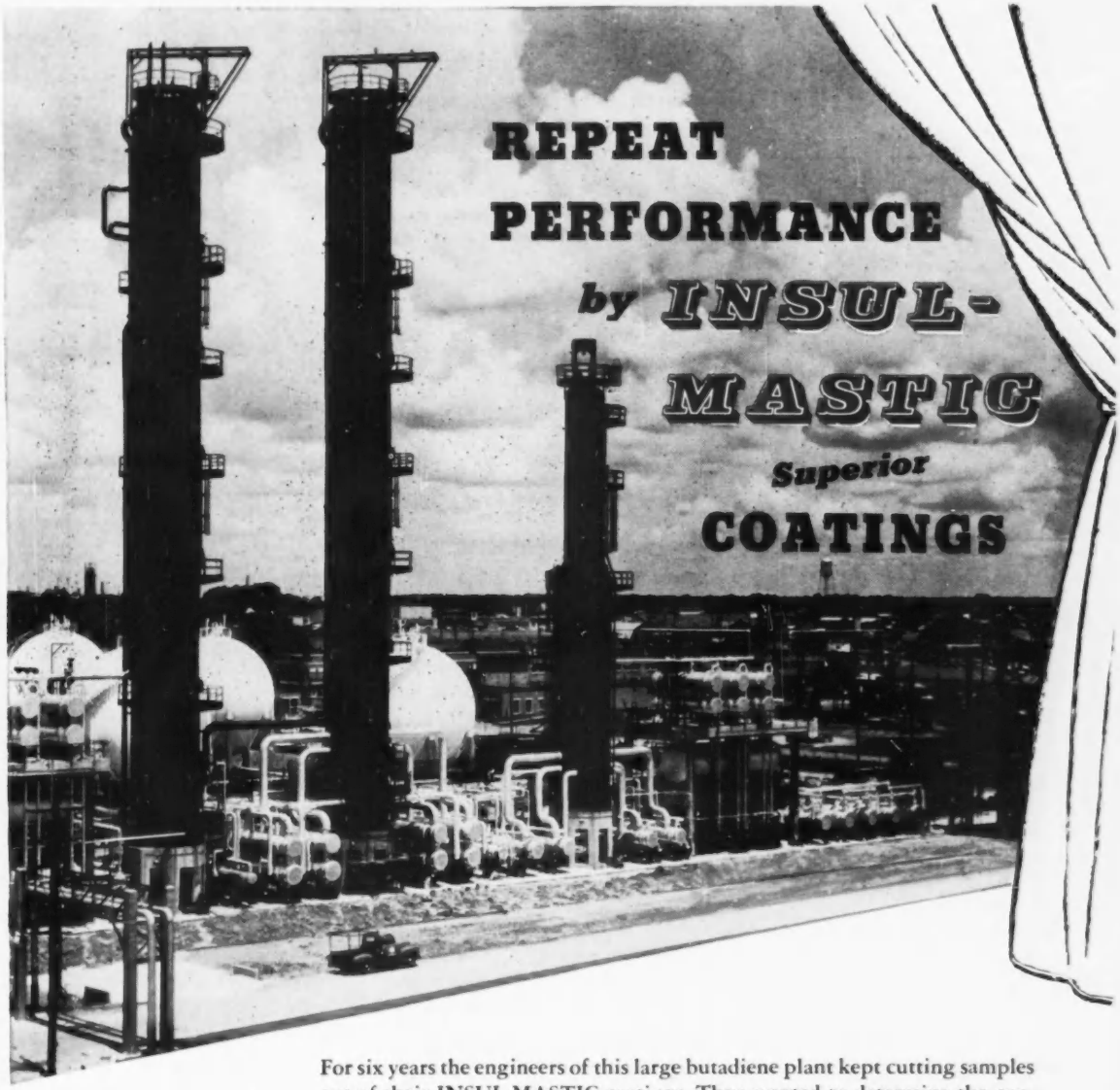



Figure 9

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difficult to screen. For instance, the screening of two different pulps represented in *Figure 16*, (the top one being a Swedist spruce sulphite, the lower one a sulphite pulp from Parana pine) gives an idea of the screenability of different pulps. Under the same conditions, half the capacity is obtained with the slot cut of 0.25-0.45 for Parana pine compared to spruce sulphite, while with centrifugal screens the capacity on Parana pine even decreases much more. This is dependent on the fiber characteristics, freeness and fiber length of the two fiber suspensions.

## Examples of Screen Combinations and Screening Systems

The dirt separating effect of different kinds of screening equipment differs a great deal for different impurities. None of the above mentiond types of equipment gives good screening results alone. A combination of different types gives a better result than any single screen. Many mills in Finland for several years have been running a double screening system. Also in Sweden, some mills are using this method. Most common is the use of centrifugal screens first and after that

Figure 10

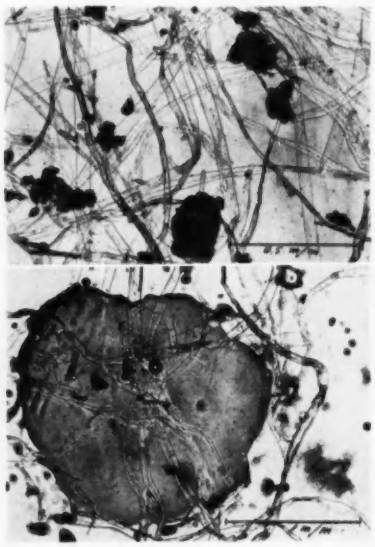


Figure 12

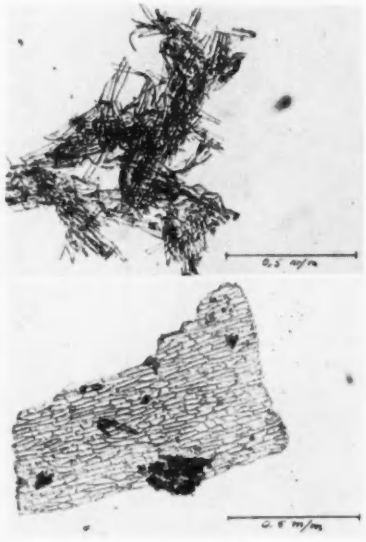


Figure 15

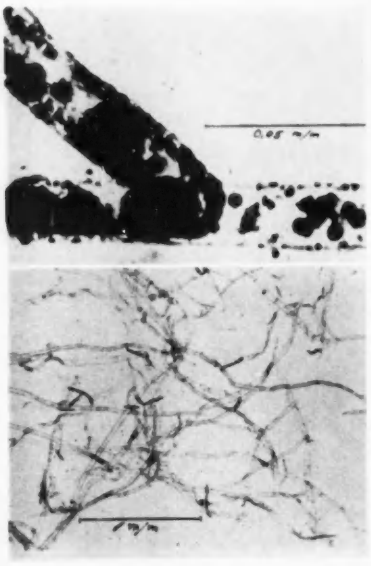


Figure 11

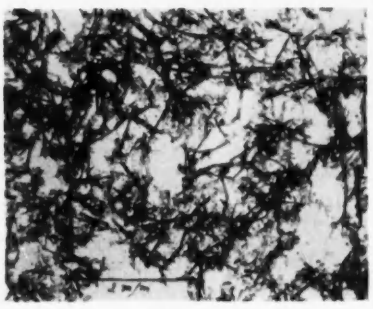


Figure 13

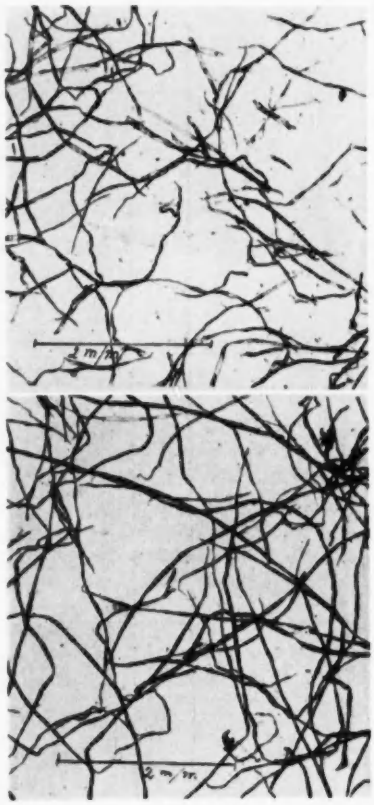


Figure 16

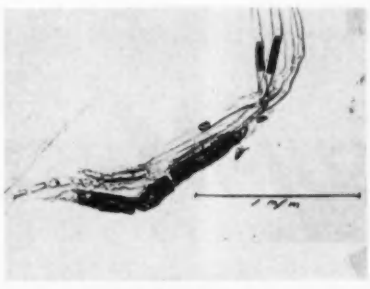
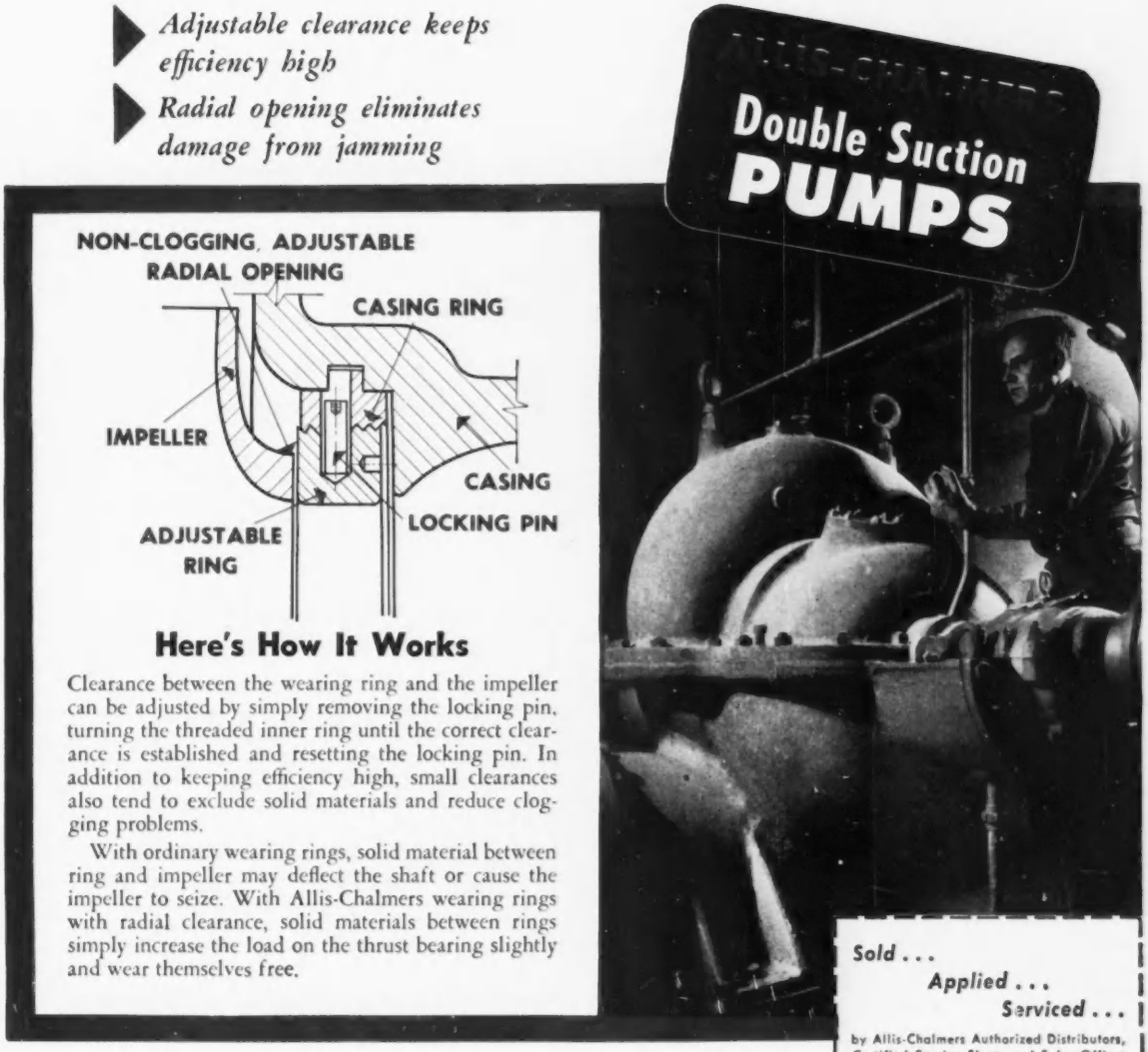


Figure 14

# WEARING RING DESIGN Cuts Fan Pump Costs

- *Adjustable clearance keeps efficiency high*
- *Radial opening eliminates damage from jamming*




## Here's How It Works

Clearance between the wearing ring and the impeller can be adjusted by simply removing the locking pin, turning the threaded inner ring until the correct clearance is established and resetting the locking pin. In addition to keeping efficiency high, small clearances also tend to exclude solid materials and reduce clogging problems.

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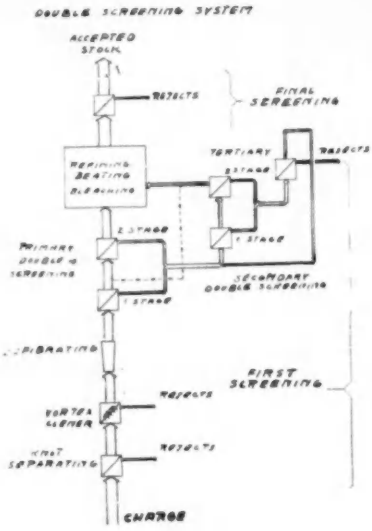


Figure 17

rescreening of the accepted pulp on flat screens, but the reverse sequence is also found. All agree that double screening gives more uniform screening results and a greater cleanliness and decreases the risk of serious shive break through when screen plate damage occurs. Double screening was mentioned by Torbjornsson in the twenties and later by Alfthan. The method has been facilitated by the appearance of modern high frequency screens and vortex separators, owing to their allowing compact installations.

*Figure 17* shows a double screening system. The nomenclature used in the following is evident from the drawing. First we have knot separation, vortex separation, defibrating and after that primary screening with a double system. Rejects from the first and the second stages are secondary screened by double screening, the rejects from the secondary stage are screened in a tertiary stage, the accepted pulp from which is brought back to the system. The accepted pulp from the second stage should be recycled and used for dilution before the screening system, that is, if the accepted pulp from this part is dirtier than that from the first stage.

The first and second screening, consequently, form the prescreening stage. If the pulp is subjected to further screening after refinement (for instance bleaching), this is called final screening. This is the system we have arrived at from experience. The following description will explain this and the different screening equipment used.

In order to get an answer to the question as to what screening equipment ought to be included in the different steps, it might be of interest to study some commonly used screening systems. Among these, the one in *Figure 18* should probably be seen most often.

## Common Flat Screen System

An improved arrangement for flat screen system. Heavy overflow on the

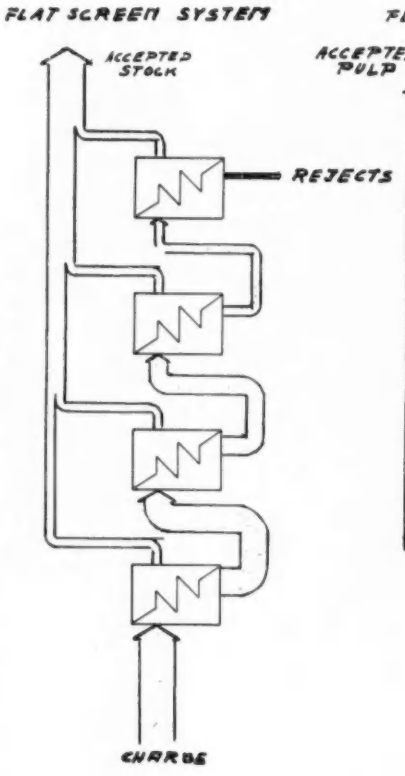


Figure 18-A

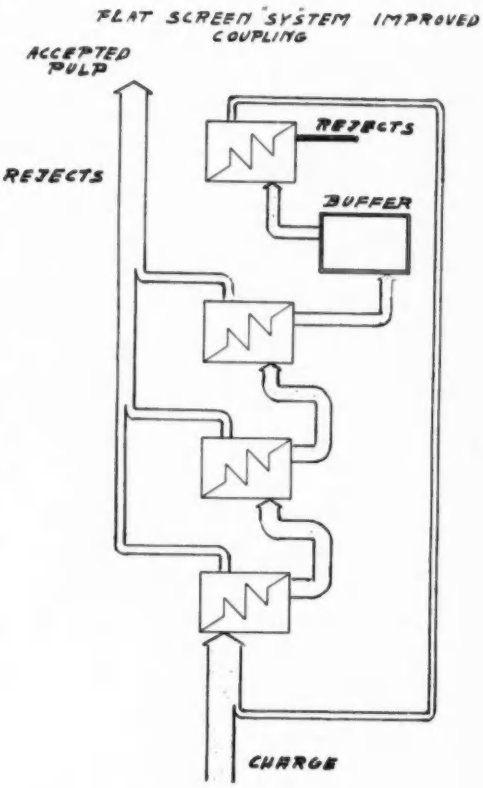


Figure 18-B

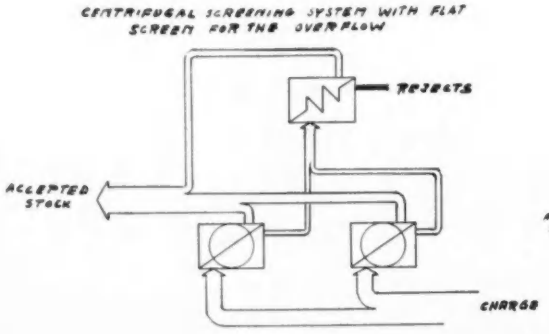


Figure 19-A

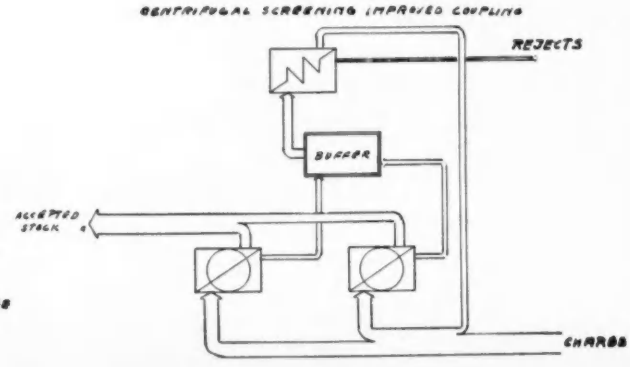


Figure 19-B

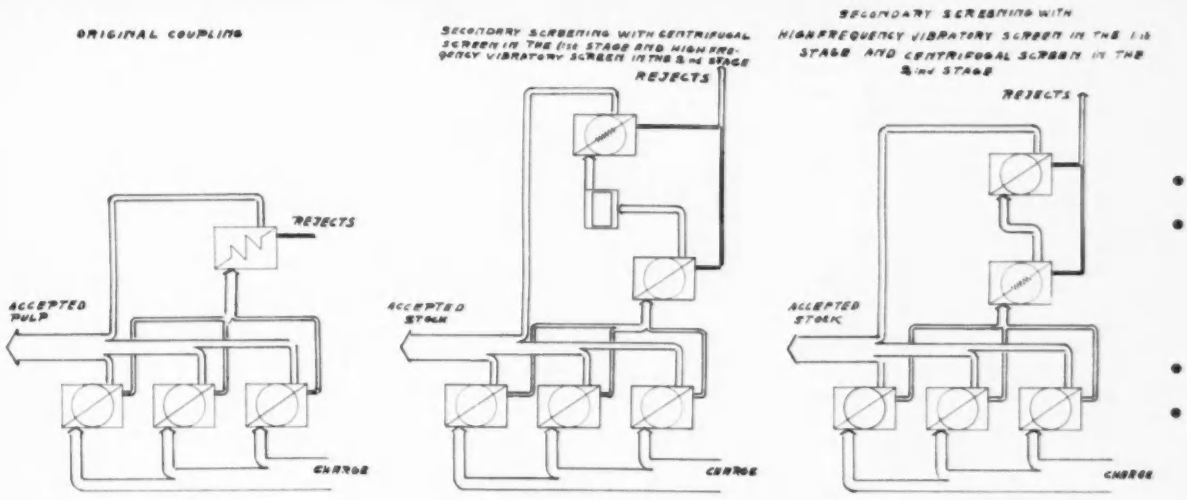
ORIGINAL COUPLING
REJECTS
ACCEPTED PULP
CHARGE
SECONDARY SCREENING WITH CENTRIFUGAL SCREEN IN THE 1st STAGE AND HIGH FREQUENCY VIBRATORY SCREEN IN THE 2nd STAGE
REJECTS
ACCEPTED STOCK
CHARGE
SECONDARY SCREENING WITH HIGH FREQUENCY VIBRATORY SCREEN IN THE 1st STAGE AND CENTRIFUGAL SCREEN IN THE 2nd STAGE
REJECTS
ACCEPTED STOCK
CHARGE

Figure 20

screens is of vital importance to good screening results. Uneven feed will either cause dry screening plates at reduced feed i.e., a bad result, or fiber losses at increased feed.

The last plates in the flat screenline cause of the most worries, even if the plates have very fine slots. High dirt concentration at this part, makes a break through very easy and also a simple slot defect may cause disastrous consequences, especially if the plant is not provided with additional screening stages.

*Figure 18b* shows that with a simple change over in the screening system we have been able to avoid the disadvantages 18a and get much better results. The accepted pulp from the last unit in the screening row is brought back to the unscreened pulp. In this way we have given the impurities from the heavier dirt loaded pulp from the last screen a further chance to be caught, and favorably increase the flow at the earlier screening plates in the series, and decreases the amount dilution water required. We have also eliminated the

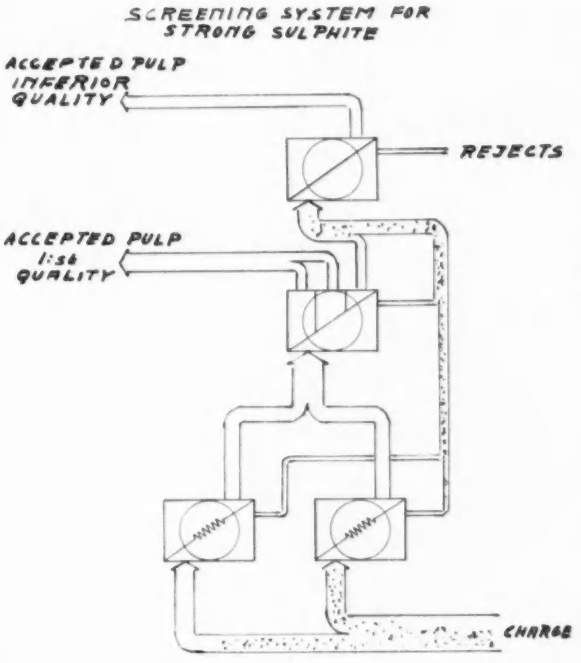


Figure 21

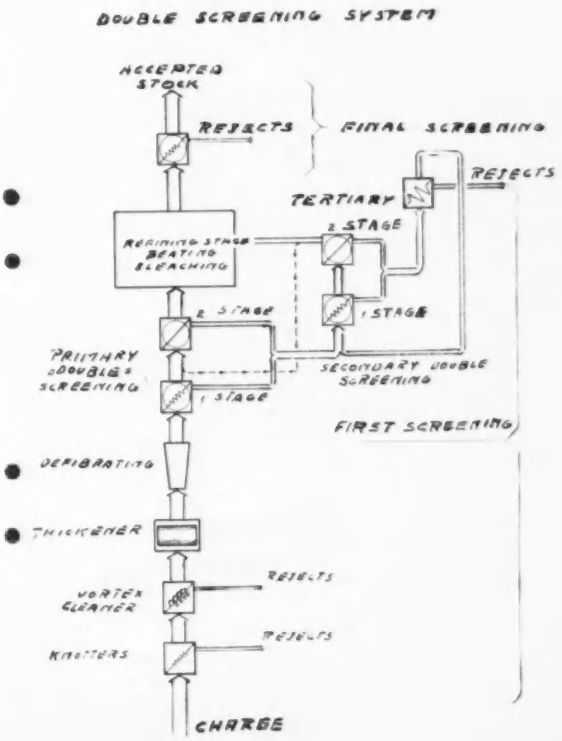


Figure 22

risk of break through of shives directly into the finally accepted pulp from this screening step, where the risk of such a break through is very great with even small impurities, the dirt concentration having its highest value at this screen. It is better not to choose a too fine slot width for the last screening step when screening in this way. If too fine slots are chosen, the amount of pulp and water entering consequently must be low, by means of which, the flow at the foregoing step must be reduced, having an unfavorable influence on the screening result here. In order to maintain the flow at the last screening step and simultaneously avoid unnecessary losses, the entering consistency is kept low.

Another very common type of prescreening equipment is the use of parallel centrifugal screens for primary screens, the rejects from which are screened on flat screens according to *Figure 19a*. This type of screening equipment has become more common in recent years.

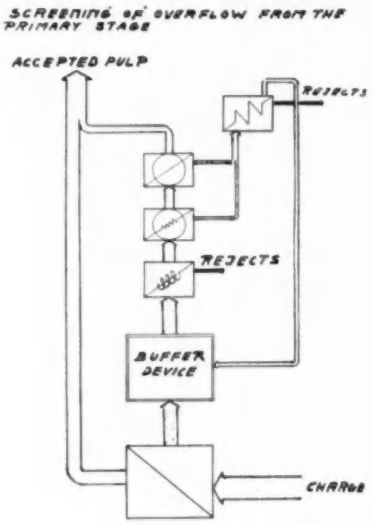

Figure 23

However this arrangement can be quite dangerous, as flat screens are less suitable for separating filamentous fibers and shives. Therefore direct acceptance of the pulp from the flat screens can affect the final product unfavorably. According to *Figure 19a*, with flat screening of the reject pulps, it is easy with pulp rich in shives and shives from bark injuries, to destroy the result obtained by centrifugal screening. A great deal of the dirt which is separated with the carefully managed centrifugal screens, is again put into the accepted pulp from slotted plate type secondary screens. Recycling the secondary pulp is in *Figure 19b* is an improvement. Underloaded centrifugal screens give every proof screening results, especially those working with an axial flow and free outlet as Cowan and Biffar. Recycling a part of the stock as outlined would be an aid in keeping the load at a fixed level.

## Sequence Between Different Screening Equipment

What sequence should be applied to slotted plate type screens and centrifugal screens? Trials have been carried out to find out what sequence between these should be used for double screening. The pulp in question was very

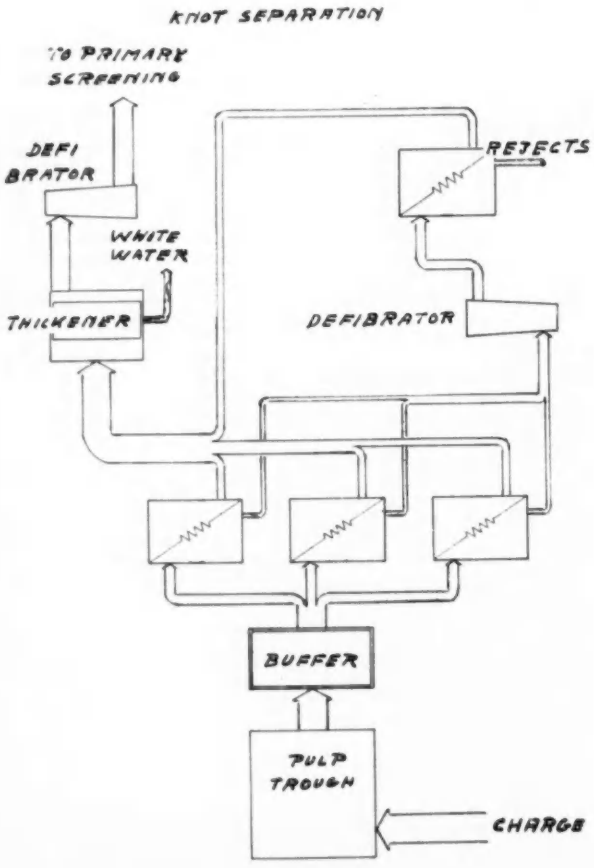

Figure 24

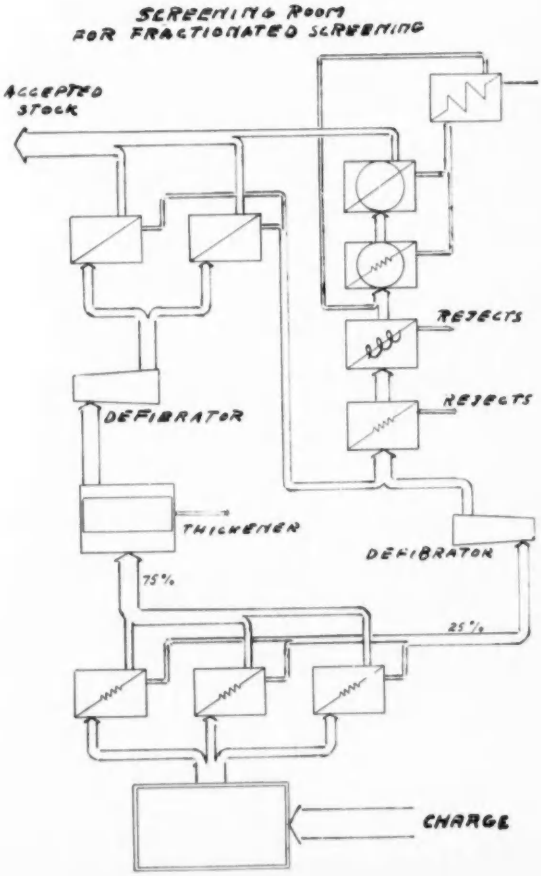

Figure 25

NATIONAL CONTAINER CORPORATION

UNITED BOARD & CARTON CORPORATION

Tennessee Paper Mills (Incorporated)

KVP KALAMAZOO VEGETABLE PARCHMENT CO.

GAIR

RIEGEL PAPER CORPORATION

THE GARDNER BOARD AND CARTON CO.

MEAD board

International Paper.....

Scott Paper Company

Kalamazoo Paper Company

THE Crystal TISSUE COMPANY

CONSOLIDATED PAPER COMPANY

FEDERAL 1776

French Paper Company

Weston RED STRIPE

SORG PAPERS

THE SORG PAPER COMPANY

BUCKEYE - BECKETT PAPERS

HOWARD PAPER COMPANY

CONTAINER CORPORATION OF AMERICA

OXFORD PAPER COMPANY

CHAMPION PAPERS

THE PHILIP Carey MANUFACTURING COMPANY

ALTON BOX BOARD COMPANY

Stonewall

STONE CONTAINER CORPORATION

THE Fairfield PAPER & CONTAINER COMPANY DIVISION GAYLORD CONTAINER CORPORATION

SCHMIDT & AULT PAPER CO.

CAROLINA PAPER BOARD CORPORATION

WALDORF PAPER PRODUCTS CO.

## These names in paper CAN'T BE WRONG

These are some of the well-known companies served by The Manchester Machine Company. They have shown their confidence in us, in our ability to serve them well. Repeat orders are the best evidence of this.

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dirty, unbleached sulphite and in the primary step single screened with centrifugal screens. Since the treatment of the rejects is of greatest importance to the final cleanliness and to the economy, it was decided first to double screen this fraction and simultaneously get a secondary screening that will permit the screens in the primary step to work at their highest efficiency. A rotary high frequency vibratory screen and a centrifugal screen were used.

At the left in *Figure 20* is shown the original arrangement with flat screens before the secondary screening. In the middle is shown the first trial arrangement with a centrifugal screen in the first stage, a thickener and finally a rotary high frequency screen in the second step. The total cleanliness is improved by this means. When the sequence of the screens was shifted, (at the right in *Figure 20)* a much better cleanliness was obtained.

The experiment indicates that the slotted high frequency vibratory screen ought to be placed first. Experience from other plants indicates the same result, that is slot first and perforated centrifugal screens afterwards.

*Figure 21* shows an arrangement for double screening of strong sulphite in the primary stage. The capacity is about 100 tons/day in this case. The pulp is fed through knotter screens, rifflers and to two rotary high frequency vibratory screens, with slot width 0.50 mm at a consistency of 1.5-2 per cent; the accepted pulp from these is screened at a consistency of 0.7-0.8 per cent in a centrifugal screen with perforations 1.4, 1.4, 1.2mm in the different zones. The rejects from the high frequency vibratory screen, and the accepted pulp from the third zone of this screen are screened a second time in a small centrifugal screen, the accepted pulp of which is used for an inferior grade.

It was possible therefore to readily study the separating ability of the different screens in various respects. In the rejected pulp from the centrifugal screen those impurities that pass through the slotted high frequency screen that is shives and filamentous impurities were found in a concentrated form.

Impurities with the character of shives were not to be found in the accepted pulp. Compared with the earlier single screening system with only centrifugal screens, the results may be summarized as follows: The more or less spherical shaped bark—and other impurities with the size of 0.5—1.5 mm have disappeared, while the flat shive shaped ones with the size less than 0.5 mm still are there, but in reduced numbers.

With this arrangement using the slotted plate type screen, the centrifugal screen is relieved from these kinds of impurities, which run the risk of being broken in this relatively vigorous screening. Also those impurities are removed, which, owing to their shape, may easily pass through the perforations. As is well known, the centrifugal screens have a defibrating action because of their method of operation. In accordance with the results and discussion above, the double screening system ought to have the arrangement shown in *Figure 22*.

## Secondary Screening

As already stated, the last fraction is the most dangerous and must be given great attention. When redesigning an old screening plant a prompt improvement is often obtained by studying secondary screening. This part above all should be built so that the screening units in the primary step of the plant are able to work at hightest efficiency, that is loaded with enough overflow and with the proper consistency for the respective types of pulp and so that any irregularity in the production won't affect the main system, but will be transferred to a sufficiently large buffering tank before the second step. We are often afraid of working with sufficient overflow because of the risk of losing first-class fibers. *Figure 23* shows one solution to this. After a buffering tank for the overflow from the primary screening, there is vortex separation, double secondary screening with a high frequency vibratory screen and centrifugal screen. The rejects are screened a third time on a flat screen, the accepted pulp of which is recycled. Recycling the pulp from the last step is considered to be of greatest importance.

Improved screening results and water economy may be obtained if the accepted pulp from the second part is returned to the first step.

## Knot Separation and Defibration

In order to keep the amount of good fibers from following the knots, to as small a quantity as possible the pulp is treated at high consistency in the defibrator.* The dirtier the initial pulp is as to bark and shives, etc., the more risky is this treatment, because the impurities are broken up into small pieces, which make separation in the following screening equipment difficult or impossible. Thus the pulp ought to be treated with greatest possible gentleness before it enters the screening department and separate knots and coarser impurities removed at earliest possible stage, that is preferably before the defibration.

Many mills have solved their knot-separating problems as is showed in *Figure 24* with a number of Jonsson knotter screens working in parallel, which are run with overflow to still another knotter with finer perforations. The overflow from the first screens is defibrated very slightly before the last knotter screen. The pulp is then thickened to the desired consistency, and only after that is the pulp defibrated, that is broken up and freed from the greater part of knots and coarser impurities.

## Fractionated Screening

When screening strong sulphite pulp of high chlorine number it is difficult or impossible to work with knotters before the defibrators, as too much defibrated pulp will follow the knots. It then seems most feasible to screen as shown in *Figure 25* i.e., at the first knot separation a much greater portion of pulp than usual is left with the knots, for instance up to 25 per cent. This fraction is assumed to retain, beside the knots and poorly cooked pulp, the greater part of the impurities in the pulp in an unbroken condition. The main part, in this case 75 per cent passes on to a thickener and may be treated on fine screens with comparatively wide slots which will thus have a high capacity. The principal part of the screening department will then be small. The knot fraction on the other hand is treated in suitable units in a double screening system as already described. This part also has to handle the rejects from the primary screening step.

## Instrumentation

The chief principle in screening is uniform feed and consistency. Extensive instrumentation is therefore justified in the screening department, such as: volume and consistency regulators for pulp and water, level controllers before and after screens, flow control, load control, etc.

Mixing and leveling troughs ought to be put in both before and after the screens. A place where buffering troughs or tanks, as already stated, are especially warranted, is before the second step in the screening system where irregularities easily appear.

## Summary

To obtain economical screening with least possible fiber loss, highest possible cleanliness, the pulp must in an early stage be separated from the greatest quantity of coarse breakable impurities. Screening should be performed in various stages with different screening equipment put together in a system which is built up so as to give each unit the opportunity to work under its best conditions. Special attention ought to be given to the last fraction of the pulps.

*In many Swedish sulphite mills the digesters are not blown but wasted out and "defibrating" equipment is used subsequently to break up the cooked chips into fibers.

# How to Get More and Better Production From Paper Knives

## And a brief outline of how knives are made

**Al Coleman**

Paper mills are not troubled with miscellaneous paper cutting problems. They should therefore be in a position to determine the why and the how to best meet their condition or operations. Many paper mills as a result of having put into operation a standard routine for cutting their paper are doing a splendid job. They have few if any problems and are able to overcome such problems as arise from time to time without much trouble. Paper mill cutting is more or less standard routine, because their cutting does not vary a great deal day in and day out. Problems do, however, have a way of creeping in. And a brief outline of how knives are made and what to look for might come in handy when it appears that the trouble has to do with the knife.

### The Knife

Paper cutting knives are sharp edge tools and have to be made very carefully. They are called "laid knives," "inlaid knives" and are occasionally referred to as "laminated knives." These references are due ot the fact that they are made by welding or bonding a very fine piece of high grade tool steel to a soft steel or soft back. When the knife is finished the tool steel becomes the cutting edge.

There are a number of important operations — such as grinding, machining, re-grinding several times, drill and tapping holes and the all important operation of straightening. This operation is done by hand by very skillful mechanics.

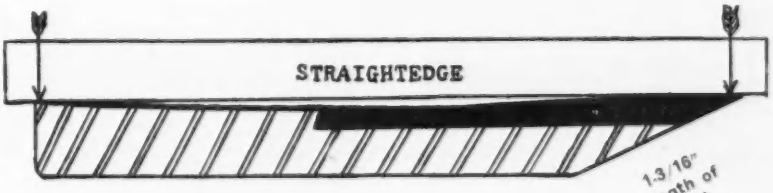
The face of the knife is the flat side of the knife, although it is often called the back. The back of the knife is the side on which the bevel is. The face of the knife is very carefully ground to a slight concave with a fine grit wheel to almost a mirror finish. This concave should not be over .003" at the deepest point. This concave is ground in for clearance and the fine smooth finish serves to eliminate friction and also gives the knife a finer and better cutting edge, resulting in a much smoother cut.

All standard knives (used for miscellaneous cutting) come through with a cutting bevel that is approximately 2½ times the thickness of the knife. This bevel can be shortened or lengthened within reasonable limits and is often advisable in order to obtain better results. A longer bevel for cutting soft papers such as tissue, and a shorter bevel for cutting hard stock, such as board. Standard knives also come through with standard temper, or hardness. Both temper and hardness can be changed or adjusted to particular requirements when ordering knives as well as bevels. The back edge of the knife is usually a few thousandths thinner than the thickness just back of the bevel.

### Grinding

Most paper mills are equipped to do their own grinding of knives. But in many cases insufficient attention is given to this all important operation. There are far too many old obsolete grinders still in use that they should have been discarded and replaced by up to date grinders that are built to take care of present day needs.

Paper cutting knives should never be ground on a dry grinder. They must be ground wet. It is also advisable ot use a good coolant and the proper grade and grit of grinding wheels. A good coolant is far superior to water. It helps to prevent rust on both the knives and the grinder. There are several very good coolants on the market, but almost anyone can make their own coolant by getting a good soluble oil from their oil supply and mixing it with water to whatever degree they find works out best for their particular needs.




Cross section of knife — face up showing face clearance — this clearance should not exceed .003. Dark portion shows tool steel inlay.

To ascertain if knife is ground correctly on the face, hold it flat, face up, in front of a window or other good light. Pass a perfectly straight clean edged rule over entire face. Light will show at points of clearance, other points will show dark. Standard cutting bevels are approximately 2½ times thickness of knife.

The operator of the grinder must be chosen with a great deal of care. Altogether too often the man assigned to the task of grinding knives is neither qualified nor fitted. Knives are of sufficient importance to justify trying to get all the life possible out of them. One of the best ways to shorten the life of a knife is to spoil it in the grinding, which can be done in a number of ways. It is not wise to just take any employee that is easily spared and put them on the grinder. Invariably that turns out to be a very costly error. In mills where grinding knives is not a full time job, the janitor or the night watchman is often delegated to grind knives in his spare time. That is when the cost of janitoring or night watching jumps to an all-time high.

Modern grinding equipment is designed to grind a flat bevel, which is the surest way of maintaining whatever degree of bevel is found to be most suited for any particular job.

When grinding knives, the feed on the grinder should be adjusted so as not to grind off too much at a time. It is advisable to grind carefully and to always stand by when grinding. If it is necessary for the operator to leave his work, a good way to avoid trouble is to shut down the grinder.

When the grinding operation on a knife is about finished, it is good policy to shut off the feed and allow the grinder to run until it sparks itself out. This helps to put a fine smooth finish on the bevel, and a nice smooth finish reduces friction and results in a smoother cut. The cutting edge should always be kept parallel with the back edge of the knife. Never permit one end of the knife to become wider than the other. When the knife is out of parallel it does not hit the cutting stick properly. This will not only reduce the life of the stick, but will not cut as well.

### Honing

After the knife is ground, it must be very carefully honed. This is an operation that requires skill, and know-how. Cutting paper is a great deal like shaving. If the razor is not properly honed, it will pull. A cutting knife not properly honed will do likewise. (One of the country's large advertisers of blades uses the slogan "the sharpest edges ever honed). That will indicate the importance of proper honing on any cutting edge, especially the edge of a paper knife, where pull makes a smooth cut impossible. Less pull means: easier and better cutting; less strain on the cutting machine; less wear on the knife; and less wear on the operator and better results.

Knives should never be honed while in the cutter. Change knives before they become completely dull. Always turn or change the stick when changing knives. Keep the cutting machine clean and well lubricated.

# NEWS OF SUPPLIERS

**E. D. Rhodes**

• F. C. HUYCK & SONS, more commonly known as Kenwood Mills, has elected Earl D. Rhodes a vice-president. Mr. Rhodes has been with F. C. Huyck & Sons since 1924, when he joined the company as overseer of carding and spinning. He was promoted successively to supervisory assignments in yarn making, preparing, and rewinding. In 1938 he was appointed personnel director, and from 1939 to 1944 served as assistant superintendent and personnel director.

In November, 1944 he became general superintendent of the entire Rensselaer mill, and has served in that capacity up to this time.

**R. S. Shrader**

• YARNALL-WARING CO., manufacturers of steam plant equipment and paper mill digester valves, has appointed Robert S. Shrader as Factory Representative with office at 4003 Aurora Avenue, Seattle, Wash.

Mr. Shrader will cover the Washington, Oregon, northern Idaho territory, and will handle sales and service for the complete line of Yarway products including blow-off valves, digester valves, impulse steam traps, strainers, water columns and gages, remote liquid level indicators, and gun-pakt expansion joints.

Prior to joining Yarway, Mr. Shrader was employed as a technical sales engineer by E. I. duPont de Nemours and Co., and for the last two years has been engaged in development work with the paper industry.

**E. C. Lenz**

• MORNINGSTAR, NICOL, INC., has elected Earl C. Lenz as vice-president of sales and advertising. Mr. Lenz was formerly vice-president and general sales manager for Paisley Products, Inc., a Morningstar subsidiary.

The new sales headquarters of Mr. Lenz will be located at the firm's executive offices in New York City, on or about January 1, 1954. He has been with the Paisley division for 21 years.

# OBITUARIES

**Miss Anna Mae Thorpe,** 68, president and treasurer of the Fort Miller Pulp and Paper Co., a groundwood mill, died Dec. 20 at her home in Fort Miller, N. Y.

Miss Thorpe was a graduate of Wellesley College, where she majored in music. After the death of her father in 1908 she assumed management of the company.

**George Dahlstrand,** 51, former cruiser, scaler and wood buyer for the Rhinelander Paper Co., Rhinelander, Wis., died of a heart condition December 15, after an eight month illness.

**William H. Wendorf,** 63, a hydroelectric engineer at the Marathon Corp. plant at Rothschild, Wis., died December 14 in a Rochester, Minn., hospital. He had been employed by the Marathon Corp. for 42 years.

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In every operation: sorting the raw wool, scouring, blending, carding, yarn spinning, weaving and finishing . . . our facilities and processes are the most modern in the textile industry. **Yet *paper making* is *really* our business, for every Albany felt is designed and manufactured to meet the special requirements of an individual machine for finish, drainage, and trouble-free performance. The result: MORE TONS PER DAY.**

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# NEWS OF ASSOCIATIONS

## Penjerdel Plans 1954 Meetings

Andrew J. Luettgen, P. H. Glatfelter Co., Spring Grove, Pa., as chairman of the Pennsylvania-New Jersey -Delaware Division of The American Pulp and Paper Mill Superintendents Assn., held a committee meeting Saturday afternoon, December 12, 1953 at the Penn Harris Hotel, Harrisburg, Pa. The purpose of the meeting was to initiate plans for the two meetings of the Division—the spring meeting and the fall meeting—for 1954.

Members present at the meeting, in addition to Mr. Luettgen were: Clarence Kingston, Hammermill Paper Co., Erie, Pa.; Cletus Coffman, The Chesapeake Paperboard Co., Baltimore, Md.; Peter P. Smith, Continental Paper Co., Ridgefield Park, N. J.; Alfred M. Hartley, Nopco Chemical Co., Inc., Harrison, N. J.; Glen T. Renegar, Container Corp. of America, Philadelphia, Pa.; George Suydam, Riegel Paper Corp., Riegelsville, N. J.; James Traill, W. C. Hamilton & Sons, Inc., Miquon, Pa.; Joseph Paciello, E. I. duPont de Nemours & Co., Inc., Philadelphia, Pa.; Alan Boyd, F. C. Huyck & Sons, Albany, N. Y.; and D. V. Vigneron, W. S. Tyler Co., Cleveland, Ohio.

Mr. Luettgen in the course of the meeting announced the following appointments for committee chairmen: golf (men) — Lionel Sutherland, Sutherland Refiner Corp., Trenton, N. J.; golf (women)—Mrs. Alfred M. Hartley; hospitality—Joseph Paciello; program and entertainment, Glen Renegar; ladies program—Mrs. Andrew J. Luettgen; mill visit—Andrew J. Luettgen; registration —Alfred M. Hartley; technical research —Clarence Kingston (other committee members—Cletus Coffman, and Peter Smith); nominating—Glen Renegar (other committee members—George Suydam, and Walter B. Morehouse, Nopco Chemical Co., Inc.); finance—James Traill (other committee members—L. H. Bidwell, Riegel Paper Corp.; Riegelsville, N. J.; and Elmer Mitchell, Glassine Paper Co., Philadelphia, Pa.); P.P.P. breakfast show—Alan Boyd; Affiliates—D. V. Vigneron; and get-together party —Harry Hulmes, The Lindsay Wire Weaving Co., Cleveland, Ohio.

The 1954 Spring Meeting of the Division wil be held on May 14-15 at the Yorktowne Hotel, York, Pa.; the 1954 Fall Meeting, on October 1-2 at Bedford Springs Hotel, Bedford Springs, Pa.

### Superintendents Meeting Dates

| DATE | DIVISION | PLACE |
|---|---|---|
| Jan. 15 | Connecticut Valley | Roger Smith Hotel Holyoke, Mass. |
| Jan. 26 | Miami Valley Div. | American Legion Hall, Middletown, Ohio |
| May 6-7 | Northwestern Div. | Leamington Hotel, Minneapolis, Minn. |
| May 14-15 | Penjerdel, Spring Meeting | Yorktowne Hotel, York, Pa. |
| May 20-21 | Pacific Coast Joint TAPPI | Gearhart Hotel Gearhart, Ore. |
| June 21-23 | National | Sheraton-Mount Royal Hotel Montreal, Que. |

### TAPPI Meeting Dates

| DATE | SECTION | PLACE |
|---|---|---|
| Jan. 12 | Ohio | American Legion Hall, Middletown, Ohio |
| Jan. 12 | Lake States | Hotel Conway, Appleton, Wis. |
| Jan. 13 | Northern District Empire State | Black River Valley Club Watertown, N. Y. |
| Jan. 15 | Lake Erie | Carter Hotel Cleveland, Ohio |
| Jan. 18 | Chicago | 29 So. La Salle St., Chicago, Ill. |
| Jan. 19 | Pacific | Tacoma, Wash. |
| Jan. 22-23 | Southeastern | Hotel Dempsey Macon, Ga. |
| Jan. 28 | Delaware Valley | Engineers Club 1317 Spruce Street, Philadelphia, Pa. |

## Harry Hadley Addresses Michigan Superintendents

The present-day foreman is the stepchild of industry, Harry E. Hadley, told the Michigan Section, American Pulp and Paper Mill Superintendents at its December dinner meeting December 17, in the Hotel Harris, Kalamazoo. Mr. Hadley is general manager of the Gardner Board and Carton Co., Middletown, Ohio.

The foreman is unwanted by the unionized worker and little helped by management, the speaker amplified his statement. If working for both sides, many a foreman finds himself unable to meet the challenge.

"Successful foremen are made by the people who work for them," the speaker said. The best working groups almost always are headed by the best foremen, he declared. Each person in these groups is good because the foreman makes him so by his leadership.

"A good foreman today must look to

the emotional needs of his workers. If a particular worker craves attention, then he should get it. If another requires a word of praise for a job well done, be sure not to omit it."

Workers who are not kept informed on events at all times lose their sense of security and of belonging, he asserted. Mill people today are faced by the fears of failure, or loss, or what neighbors will think, fear of disease and injury and of the unknown.

Lack of education and preparation is a serious handicap to many foremen today. Their greatest problem is handling of the people who work for them.

The typical good foreman today is the one who can best get others to work for him, Mr. Hadley declared. He recalled that in the earliest era when foremen were used they dominated any situation by physical presence. Later, the foreman became the one who knew the most about his particular operation.

One of the greatest problems facing a foreman is his own lack of realization that a problem exists, the speaker concluded. C. W. Callighan introduced the speaker.

The meeting was attended by 89 persons. Mr. Callighan was host at a reception which preceded the dinner.

Mr. Hadley received two honorary memberships.

# Program Technical Section C. P. P. A. Annual Meeting

## January 27

### The Chapman Printing Smoothness Tester

1—Basic Development and Recent Modifications, by S. M. Chapman, Pulp and Paper Research Institute of Canada.

2—Instrument Variables and Some Results of Application, by G. R. Sears, J. A. Van Den Akker, M. Aprison, N. J. Beckman, C. W. Denzer, The Institute of Paper Chemistry.

3—Design and Use of a Direct Reading Tester, by D. N. Obenshain, West Virginia Pulp and Paper Co.

Screening with the Vibrotor, by S. Fahlgren, Bird Machine Co.

Neutral Sulphite Cooking of Hardwoods, by R. M. Dorland, R. A. Leask, and J. W. McKinney, Abitibi Power & Paper Co. Ltd.

Experience with Liquid Sulphur Dioxide in Acid Making, by R. D. Litchfield, Abitibi Power & Paper Co. Ltd., Smooth Rock Fibre Div.

Field Investigation of Corrosion in Alkaline Pulping Equipment, by C. B. Christiansen, Pulp and Paper Research Institute of Canada.

Corrosion Testing Methods. A panel discussion sponsored by the Chemical Engineering Committee.

Technical Section Business Meeting Election of Officers, Chairman's Report, Presentation of Awards.

Colloidal Chemistry Applied to Board Making, by W. H. Birchard, Fraser Co., Ltd.

Comparison of British and American Board Mill Operations, by J. C. Alford, Continental Paper Co.

Materials Handling Methods in Pulp and Paper Mills, a 16mm. colour film, with commentary by D. D. Hall, The E. B. Eddy Co.

What's Wrong with the Design and Operation of Woodhandling in Mill Yards, by G. H. Mikkelborg, The Ontario Paper Co. Ltd. (based on replies to Materials Handling Committee questionnaires)

### Group Discussions

Paper Machine Condensate Removal Systems, Panel Moderator—J. C. Jordan

Construction and Operation of a Simple Condensate Removal System on Newsprint Machines, by J. C. Jordan, Abitibi Power & Paper Co. Ltd.

Pilot Dryer Tests Using Different Tips and Siphons with Varying Pressure and Condensing Rates, by a representative from Consolidated Paper Corp. Ltd.

Practical Applications of the Pilot Dryer Tests, by F. A. Garrett, Canadian International Paper Co.

Paper Machine Condensate Removal Systems and Steam Plant Operation, by A. A. Smith, Canadian International Paper Co.

Drying Paper with Superheated Steam, by J. E. Barnhart, Green Bay Paper and Pulp Co.

### Fundamental Research

Continuous Process for the Manufacure of Chlorine Dioxide, by W. H. Rapson, University of Toronto.

Action of Chlorine Dioxide on Lignin and Model Substances, by C. B. Purves, McGill University.

## January 28

### Peroxide Bleaching of Pulp

Laboratory Developments Related to Mill Application, by K. G. Aitken, Canadian Industries Ltd.

Mill Application at Marathon, by D. M. Reid, Marathon Paper Mills of Canada Ltd.

Mill Application at LongLac, by G. Rowlandson, Longac Pulp and Paper Co. Ltd.

Laboratory Development Related to Mill Application, R. L. McEwen, Buffalo Electro-Chemical Co. Inc. (An informal paper — not for publication)

### Panel Discussion on Operating Practices

As well as the above speakers, the panel may include: W. F. Schroeder; National Distillers Chemical Co.; C. L. Tomlinson, Howard Smith Paper Mills Ltd. A representative from Canada Paper Co.

### Mechanical Session

Metallizing Unlimited in Pulp and Paper Mills, by L. W. Darlington, B. W. Deane and Company.

Friction Loss of Sulphite Stock in Pipe Elbows, by V. W. G. Wilson, McGill University.

Progress Report on Lubrication in a Large Newsprint Mill, by Ted Medzwiecki, Anglo-Newfoundland Development Co. Ltd.

Study of the Problem of the Design of Ceramic-Lined Digesters, by F. M. Kraus, Stadler, Hurter and Company (to be read by title only).

### Group Discussions

### Problems of the Control Superintendent

Application of Statistical Quality Control to Process Operation at the Manitoba Paper Co., by D. O. White, to be read by E. C. Metherell, Manitoba Paper Co.

1—Grit Content of Pulps Originating from Various Types of Grinders and Methods Used to Eliminate Grit, and 2—Effect of Grit on Mill Equipment, by N. S. Grant, Spruce Falls Power and Paper Co. Ltd.

Continuous Methods of Measuring or Estimating the Quality of Pulp by Such Methods as 1—Blue Glass, 2—Bardsley, 3—Murley, etc., by J. H. Bardsley, St.

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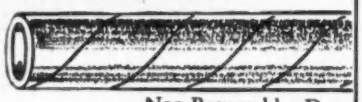

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Lawrence Corp. Ltd.

Current Practices in Slime Control, by W. E. Patte, Consolidated Paper Corp. Ltd.

Thermal Compression Evaporator for Spent Sulphite Liquor by D. Craig and J. D. Russell, Northeastern Paper Products Ltd.

Spray Drying and its Practical Applications, by W. H. Gauvin, McGill University.

Steam Plant and Components—Capital Cost Considerations by a representative from Stone and Webster Canada Ltd.

A Survey of Plant Electrical Maintenance Staffs, by R. V. Hamlin, Donnacona Paper Co. Ltd.

### Group Discussions

**Value of Various Wet-End Retention Agents**

Sveen Glue, by R. Tutt Jr., Peter Cooper Corp.

Mannogalactan Additives in Paper, by R. D. McCarron, Morningstar, Nicol Inc.

Use of Starches as Aids in Production of Papers Containing Mineral Fillers, by M. L. Cushing, Stein Hall and Co. Inc.

Sodium Aluminate—Non-Fibrous Raw Material, by H. E. Berg, National Aluminate Corp.

Representatives from pulp and paper mills will include J. N. Swartz, Howard Smith Paper Mills Ltd., and W. Gallay, The E. B. Eddy Co.

**Paper Mill Noise**

A discussion to be led off by a paper entitled Paper Mill Noise Problems, by M. N. Davis and R. H. Caston, Kimberley-Clark Corp.

### January 29

Performance Testing the Dryer Section of a Paper Machine, by G. J. Chalmers Ross Engineering of Canada Ltd.

Machine Room Ventilation Study and Recommendations, by H. W. Rogers, Canadian Blower and Forge Co. Ltd.

Report on Closed Hood Installations, by J. C. Jordan, Abitibi Power & Paper Co. Ltd.

The Use of the Betameter for Newsprint Basis Weight Control—a Preliminary Report, by C. S. Waddell, Abitibi Power and Paper Co. Ltd., Sault Ste. Marie Division.

Refining Mill Wastes for Newsprint, by R. T. Wetmore, The Ontario Paper Co. Ltd.

Grinding Practices at Bowater's Norway, by C. Anker, Kisor Traemassefabriker, Aktieselskapet, Norway.

Measurement of Wet Web Strength, by L. M. Lyne and W. Gallay, The E. B. Eddy Co.

Studies on the Fundamentals of Wet Web Strength, by L. M. Lyne and W. Gallay, The E. B. Eddy Co.

Some Effects of Gases on Properties of Fibre Suspensions, by G. Gavelin, Northeastern Paper Products Ltd.

Flocculation in Flowing Stock Suspensions, by A. A. Robertson, and S. G. Mason, Pulp and Paper Research Institute of Canada.

## AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

| | | | | | |
|---|---|---|---|---|---|
| 1953 | Nov. 21<br>97.2 | Nov. 28<br>91.0 | Dec. 5<br>95.0 | Dec. 12<br>94.7r | Dec. 19<br>96.5 |
| 1952 | Nov. 22<br>91.9 | Nov. 29<br>88.4 | Dec. 6<br>92.4 | Dec. 13<br>93.8 | Dec. 20<br>95.1 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | 97.1 | 97.8 | 95.1 | 90.4 | 87.9 | 87.6 | 73.3 | 86.1 | 81.7 | 90.7 | 90.5 | 85.3 | 88.6 |
| 1953 | 94.5 | 94.6 | 94.4 | 92.7 | 93.9 | 93.8 | 82.6‡ | 95.2‡ | 93.7‡ | 97.4‡ | 95.0‡ | | |

COMPARATIVE YEARLY SUMMARIES

| | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 |
|---|---|---|---|---|---|---|---|---|
| Year to date | 101.4 | 104.9 | 96.7 | 88.9 | 96.6 | 99.6 | 90.7 | 93.7 |
| Year Average | 96.9 | 101.7 | 92.1 | 83.7 | 95.8 | 98.0 | 88.6 | |

‡ Preliminary.
r Revised.

PAPERBOARD OPERATING RATIOS†

| | | | | | |
|---|---|---|---|---|---|
| 1953 | Nov. 21<br>95 | Nov. 28<br>86 | Dec. 5<br>88 | Dec. 12<br>94 | Dec. 19<br>93 |
| 1952 | Nov. 22<br>98 | Nov. 29<br>91 | Dec. 6<br>95 | Dec. 13<br>97 | Dec. 20<br>96 |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1952 | 81 | 86 | 85 | 82 | 82 | 82 | 71 | 89 | 88 | 96 | 96 | 85 | 85 |
| 1953 | 91 | 95 | 95 | 95 | 96 | 93 | 81 | 98 | 94 | 97 | 94 | | |

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables *all* the ratios shown are on the basis of a normal 6 and 7 day capacity.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

# ANNUAL FORECAST AND REVIEW OF PULP AND PAPERMAKING

## JANUARY 29th, 1954

Leaders in every phase of these industries will give readers of the JOURNAL the year end story of the remarkable advance in pulp and papermaking (a new tonnage record for paper in 1953 is sure). Detailed production and possibilities for 1954 of Groundwood—Kraft—Writing—Book—Tissue and Specialties will be written by authorities in each division—Raw Materials—Chemicals—End uses of paper, past performances and possibilities will all be included in an issue that will acquaint the readers with the expected discussions during Paper Week in New York which bgins February 14th.

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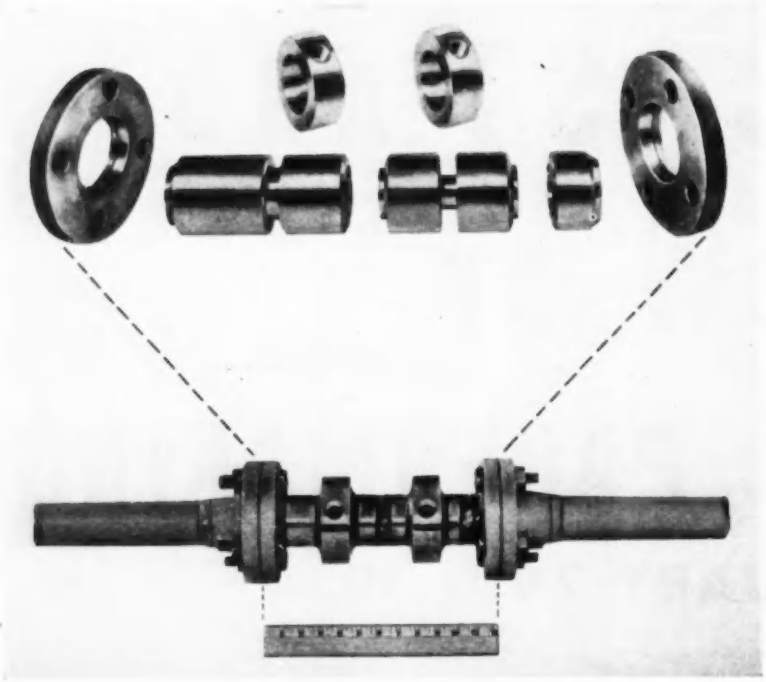
# NEW EQUIPMENT AND SUPPLIES



## Miniature Venturi Tube

Designated the Type TF Venturi, this unit was designed for the measurement of fluids, gaseous or liquid, in quantities considered too small for the application of a normal size venturi or orifice. It is manufactured by Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia 42, Pa.

The tube may be furnished with sizes of inlet of ½, ¾, 1, 1¼, 1½, and 2 inches, there being four different ratios of throat to main in each of the sizes. The unit is intended for installation directly in the pipe line. In such cases, no supplemental approach or downstream pipe section is provided. When the pipe line is of other than the selected standard ratio venturi, attention to the conditions of approach is necessary.

Component parts of the tube are welded together to form a completely integrated assembly, each part having been machined to a tolerance of 0.0005 inches. It is furnished with annular pressure equalizing rings at the point where the main throat taps are located and usually is equipped with flanged ends. Screwed ends for sleeve couplings may be provided if specified.

The tube may be made of cast iron, stainless steel, or bronze to suit the fluid to be measured.

## Emulsion For Improved Scuff Resistance

A new resinous emulsion, known as Aquex #16, is now available from Aquex Development & Sales Corp., Whippany, N. J. As an ingredient in the production of scuff resistant board and paper, it is said to show unusual promise. The emulsion is compatible with standard calender and tube sizes, or may be applied separately by a spray system. It is stable in a pH range from 7 to 9.

The company states that improvements in scuff resistance of liner board finishes have been noted up to 20 times. Level of scuff test can be regulated by the amount of emulsion applied. The material is also offered for the production of bag papers, automatic bookkeeping machine board, twisted paper yarns, paper cups, and food containers.

The deposited film is described as resistant to all common acids and alkalies and is only slightly soluble in solvents such as trichlorethylene. The emulsion is currently available in commercial quantities, and the manufacturer will treat and return for inspection any submitted test sheets.

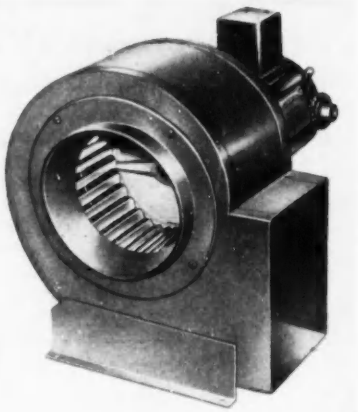
## Process For Repulping Wet Strength Papers

Further developments in its process for the repulping of wet strength papers have been reported by the Aquex Development & Sales Corp., Whippany, N. J. The process employs a chemical known as Aquex R.P.W.S. Latest tests reveal that the process produces the best results in the minimum time at moderate temperatures (approximately 150 degrees F.) and at a pH ranging from 4.5 to 5.5.

The company states that although the process can be used to repulp wet strength papers at any temperature or pH range, the optimum physical properties of the repulped fibers are not developed above the recommended pH range.

It is said that the process not only breaks up the wet strength papers, but inhibits the corrosive effect of the lower pH on the metals in the system and protects the stock against excessive degradation. Tests on the repulped fiber show maximum retention of physical strength. The stock is also brighter, due to less iron deposition on the fiber, it is claimed.

Although the stock can be defibered in all types of equipment, the more efficient the equipment, the less chemical required and the shorter the preparation cycle. The use of some alum is recommended for most economical results.

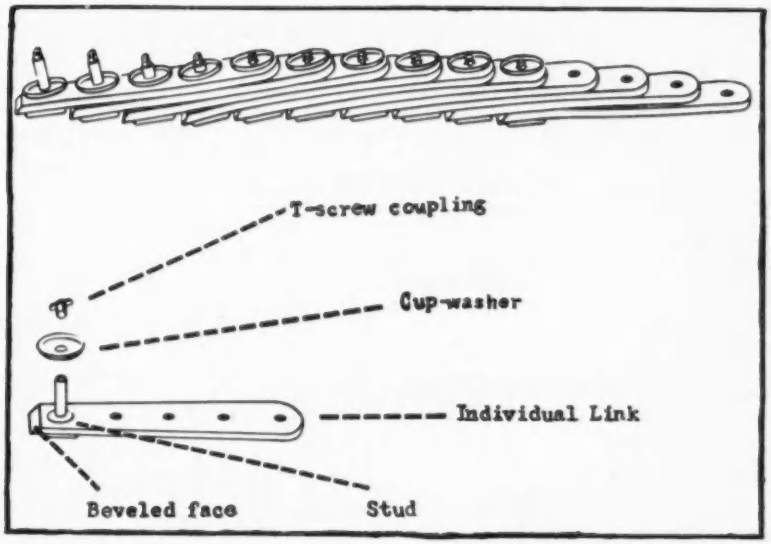


## High-Volume Blower With Safety Cutout

A large-capacity blower with six-inch wheel for removal of fumes, smoke, and stale air, or for cooling and ventilating, is being offered by Standard Electric Mfg. Co., Inc., West Berlin 12, N. J.

The blower is rated at 600 cubic feet of air per minute, and it features an automatic cutout which stops the totally-enclosed 110-volt, 60 cycle motor before it can overheat.

The same features are available in smaller sizes with different capacities and current characteristics.

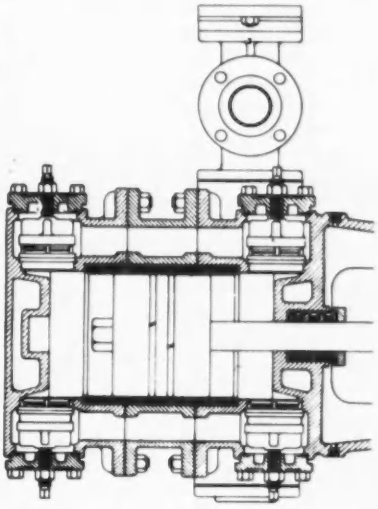



## Adjustable V-Belting Now Made in D & E Sizes

Manheim Manufacturing & Belting Co., Manheim, Pa. is now manufacturing its patented adjustable V-belting for D and E section belted drives. Known as Veelos belting, the new sizes are designated as Veelos TD and TE.

Employing the former basic design of individually-coupled links, the new style is said to offer newly-designed studs, cup-washers, and T-screws. The links are rubbed coated and beveled on the leading face to provide extreme flexibility, it is said. Oil-proof construction can be furnished for oily and high temperature drives. The manufacturer supplies a coupling and uncoupling tool with each reel of belt, although ordinary pliers can be used.

Complete specifications and engineering data are contained in manufacturer's catalog, available on request to the company.

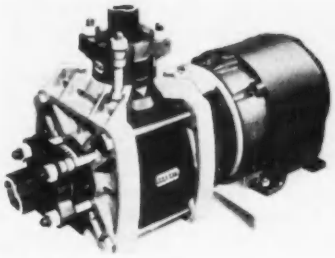


## Compressors With Sectionalized Cylinders

Pennsylvania Pump & Compressor Co., Easton, Pa., has introduced the Class ATH Air and Gas Compressors, which are equipped with sectionalized cylinders arranged in three pieces with the inlet and discharge valves in the fronthead and backhead. All are equipped with cylinder-liners as standard.

The advantage of this cylinder design is said to be ease of disassembly and removal of the liner without disconnecting inlet or discharge air piping.

The manufacturer states further that the new design allows for better cooling throughout the cylinder and valves, particularly in the area adjacent to the cylinder heads where the maximum temperature rise takes place.



## Graphite Pumps For Corrosive Service

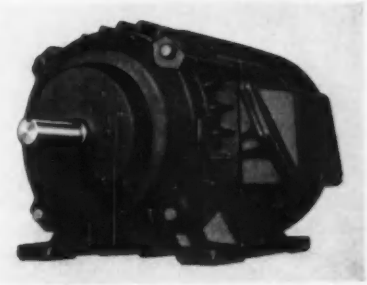
Two styles are offered in a new series of graphite pumps for installation in process service where corrosive conditions prevail. Known as Karbate Impervious Graphite Centrifugal Pumps, Types C and F, they are products of National Carbon Co. Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

The manufacturer points out that the pumps are useful not only for severely corrosive service but also for milder salt brine or sea water service.

Type C is a heavy duty model in three basic sizes, having discharge openings of two, three, and four inches, with either 10- or 8-inch impellers.

Type F (shown above) is a motor-mounted design for installations which require the compactness of a close-coupled unit. Pump and motor alignment is automatic. The mechanical seal is self-cooling, self-lubricating, and can be adjusted while the pump is running.

Both types offer capacities from 5 to 1500 g.p.m. at discharge pressures up to 1,000 p.s.i., and pump efficiencies to 60 per cent. Copies of descriptive catalog, Catalog Section S-7250, are obtainable from the manufacturer.



## A.C. Motor Line Now Built to New Standards

A new line of squirrel-cage induction motors is now being offered by Reliance Electric and Engineering Co., 1088 Ivanhoe Rd., Cleveland 10, Ohio. The line, including protected and enclosed motors for all industrial purposes, is being built to recently adopted standards of the National Electrical Manufacturers Association.

The first of the new motors to appear will be built for 1, 1½ and 2 h.p. applications, in frame sizes 182 and 184. The balance of the line, up to and including 30 h.p., will be introduced at regular intervals during 1954 and the early part of 1955. The company's present A.C. line will continue to be available during this change-over period.

The manufacturer states that new developments in insulating materials, ventilation, heat transfer, and electrical efficiency have been incorporated into the new motors. They are also said to feature more compact design at greater horsepower. Open motors, as they were formerly known, will give way to more highly protected machines; the new totally-enclosed fan-cooled motors are built to withstand wider atmospheric conditions in any mounting position.

## Kink-Resistant Plastic Tubing

Ace-Flex is a new transparent plastic tubing for temporary or permanent fluid lines requiring flexibility. The material is made by American Hard Rubber Co., 93 Worth St., New York 13, N. Y., The manufacturer states that the tubing is inert, odorless, non-toxic, resistant to most inorganic acids and alkalis and to many organic chemicals, and is kink-resistant.

It can be connected to glass, metal, or plastic fittings by dipping it in soapy water and slipping it over the fitting. Couplings can be made from the tubing itself. Permanent joints can be made with ketone cement.

Standard sizes run from 0.120 to 1 inch. Special sizes and colors are also available.

## New Standards Set For Magnesia Insulations

The Magnesia Insulation Mfg. Assn., 1317 F St., N. W., Washington 4, D. C. has adopted new simplified thickness specifications for pipe insulations made from 85 per cent magnesia and diatomaceous silica. It is said that the new specs will aid specification writing and permit the use of all sizes and thickness in double layer construction.

The nominal thicknesses will start with 1 inch and step up by ½-inch increments. Actual thicknesses will depart slightly from the nominal thicknesses to facilitate double layer construction. Specification writers may specify in nominal inches with the assurance that actual thicknesses will conform to the Table regardless of the source of the material. Critical engineering calculations should employ the actual thickness, it was stated.

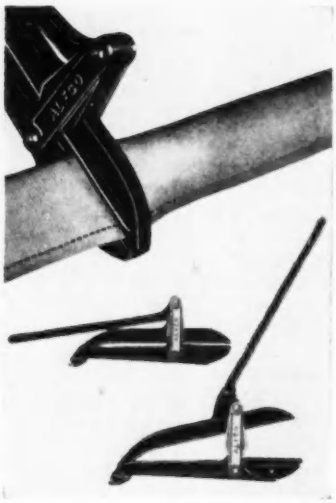
A complete conversion table covering all insulation thicknesses for all pipe sizes can be obtained from the association.

## V-Belts With More H.P. Capacity

R/M Super-Power V-Belts have lately been introduced by Raybestos-Manhattan, Inc., Manhattan Rubber Div., Passaic, N. J. The manufacturer claims these belts have a horsepower capacity average of 40 per cent more than standard V-belts.

The increase in belt capacity is said to permit the use of fewer belts on new drives having power requirements that required more of the old-types belts.

The belt is constructed of all synthetic rubber and a new synthetic fiber for the extra strength. The belt is oil-proof, non-spark, and heat-resistant. Descriptive folder #6628 is available on request from the manufacturer.



## Quick Shut-Off For Water Hose

A hose shut-off device, made particularly for use on double-jacket fire hose, is now available from American-La-France-Foamite Corp., Elmira, N. Y. Known as the Alfco Hose Shut-Off, it operates effectively on 1½, 2½, and 3 inch hose.

A downward pressure on the operating lever locks the shut-off in place. It can be shifted from one hose to another in the length of time it takes to operate the lever.

The unit is made of steel with weather-resistant painted finish. It is 27½ inches long and weighs 16 pounds. A cadmium-finished bracket can be furnished to serve as a mounting for the unit.

## Pardon Us!

On page 40 of the December 4 issue the portrait of R. F. McClellan of Nopco Chemical Co. was incorrectly labeled P. R. Lindsay.

## New Discovery Promises To Reduce Pine Seedling Loss

A fungicide called tetramethylthiuram disuifide has shown promise in controlling "damping-off" losses in pine forest nurseries, according to University of Wisconsin and Wisconsin Conservation Department forestry researchers.

When applied as a coating around each pine seed, the fungicide controlled the fungus disease both before and after the seedlings emerged from the soil. The fungicide was applied with a druggist's pill coater, using a type of cellulose to hold it to the seed.

The same material, when used in soil applications, controlled the disease after the seedlings emerged from the ground and also reduced weeds in seedbeds sown in the spring or fall, but failed to control losses before the seedings emerged.

The researchers said further testing is required to learn the best formulations.

## Industrial Hand Cream

A prophylactic hand cream called Donovo for industrial use is said to combat the skin-drying and cracking effect of kerosene-base waterless hand cleaners and detergent-type cleaners. Made by Chase Chemical Co., 1374 E. 170th St., Cleveland 10, Ohio, the hand cream helps prevent drying out of the skin and soothes chapped and irritated skin.

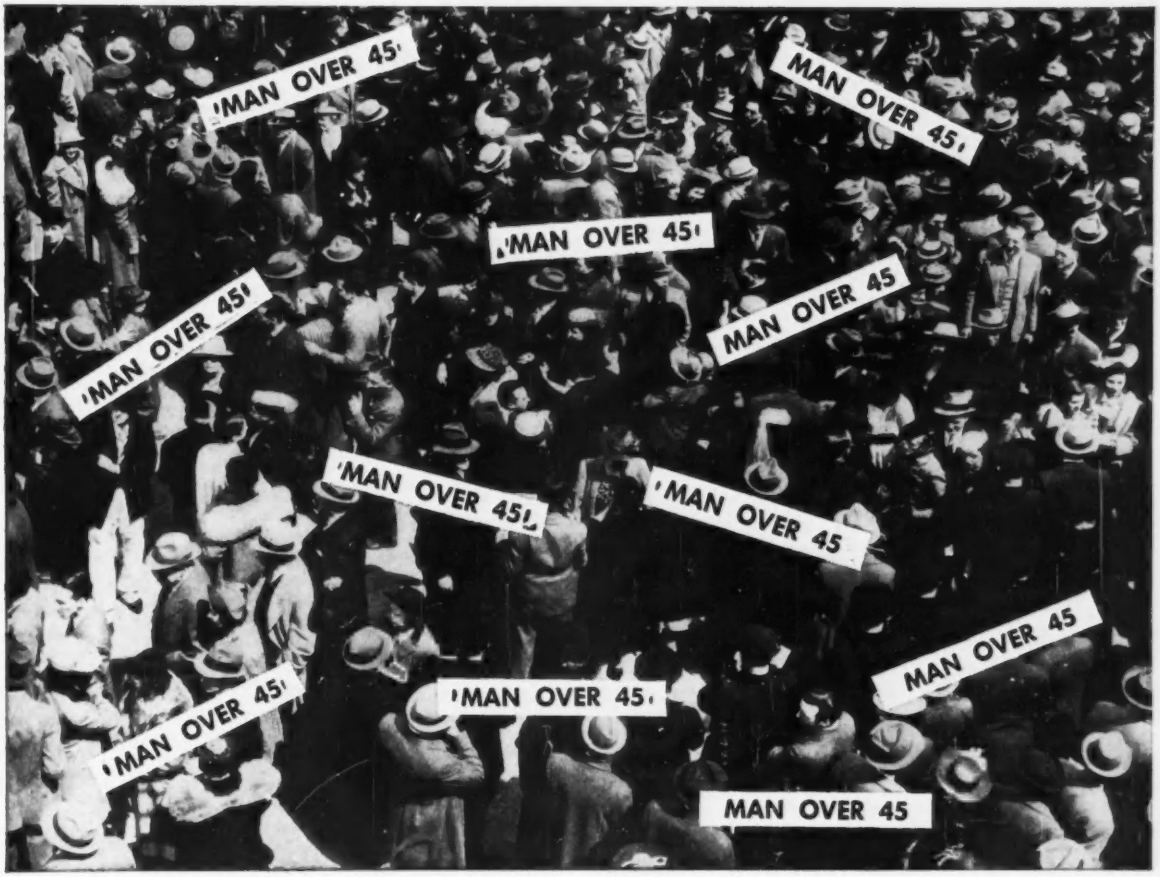
It contains 15 per cent hydrous lanolin and USP Menthol in a hydrophilic cream base. The company recommends its use by workers during the lunch-hour wash up and at the end of their shift. It is available to industry in 1¾ ounce and 8 ounce jars. And a sample may be obtained from the manufacturer.

## Sisalkraft Merging with Manufacturing Division

The Sisalkraft Co. announces a merger with its manufacturing division, the American Reenforced Paper Co., effective January 4. The organization will be renamed American Sisalkraft Corp. The firm, which manufactures a line of waterproof papers, insulation and box tape products, will move certain key personnel to its plant headquarters in Attleboro, Mass. Regional sales offices will remain in Chicago, New York and San Francisco.

## Lawless Completes New Warehouse

Lawless Bros. Container Corp., North Tonawanda, N. Y., has completed a new paper storage warehouse adjoining its plant, in a $100,000 expansion program. The addition, with 17,200 sq. ft. of space, brings the total plant area to 67,000 square feet.




## *But why MEN over 45?*

Our doctors still don't know *why*, but if you are a man over 45 you are six times as likely to develop lung cancer as a man of your age twenty years ago. They *do* know, however, that their chances of saving your life could be about *ten times* greater if they could only detect cancer long before you notice any symptom in yourself. (Only 1 in every 20 lung cancers is being cured today, largely because most cases progress too far before detected.) That's why we urge that you make a habit of having your chest X-rayed every six months, no matter how well you may *feel*. The alarming increase of lung cancer in men over 45 more than justifies such precautions. Far too many men die needlessly!

Our new film "The Warning Shadow" will tell you what every man should know about lung cancer. To see this film and to get life-saving facts about other forms of cancer, phone the American Cancer Society office nearest you or simply write to "Cancer"—in care of your local Post Office.

***American Cancer Society***

# PRICES

## MARKET WOOD PULP

First Quarter Contract Prices Per Short Air-Dry Ton

| | Delivered Basis | | Varying Freight Allowances | | |
|---|---|---|---|---|---|
| | U.S. | Canadian | Swedish | Finnish | Norweigian |
| Groundwood | | ‡$60.00/$95.00* | *$80.00/$85.00* | $$80.00/ — | |
| Kraft, Bleached | 140.00/147.50 | 145.00/155.00 | $140.00/142.50§ | | $$142.50/ — |
| Semi-bleached, Kraft | 135.00/ — | 130.00/135.00 | $130.00/132.50§ | 130.00/135.00* | |
| Kraft, Unbl. | 95.00/105.00 | 100.00/135.00 | *105.00/110.00* | *105.00/135.00* | |
| Sulphite, Blchd. | 140.00/ — | 140.00/ — | $135.00/140.00* | 140.00/ — * | $135.00/140.00* |
| Sulphite, Unblchd. | 120.00/ — | 120.00/ — | $115.00/122.00* | 120.00/125.00* | |
| Sulphite, Unbl. Gl'sn. | | 124.00/ — | *124.00/ — | | |
| Soda, Blchd. | 140.00/ — | 140.00/ — | | | |

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

## RAG MARKET

### New Domestic Cotton Cuttings

Delivered Mill Basis

| | Per 100 lbs. |
|---|---|
| No. 1 White Shirts | $11.25/$11.50 |
| No. 1 Unblchd. Muslins | 14.00/ 14.50 |
| Blchd. & Unblchd. Underwears | 14.00/ 15.00 |
| Blchd. Canton Flannels | 11.00/ 11.50 |
| No. 1 Light Silesias | 7.50/ 8.00 |
| No. 1 Light Prints | 6.00/ 6.50 |
| No. 1 Blue Overalls | 6.75/ 7.25 |
| Suntan Khakis | 6.00/ 6.50 |
| Fancy Shirts | 6.50/ 7.00 |
| Mixed Khakis | 3.50/ 4.00 |
| Cottonades | 3.75/ 4.25 |
| No. 1 Washables | 3.50/ 3.75 |

### Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

| | Per 100 lbs. |
|---|---|
| Mixed White | $2.75/$3.00 |
| Cotton Pants & Overalls | 2.00/ 2.25 |
| Thirds and Blues, Repacked | 1.65/ 1.75 |
| No. 2 Roofing Rags | .70/ .75 |

## COTTON LINTERS

### Memphis Market

F.o.b. Oilmills

| | Dec. 15 Per 100 lbs. |
|---|---|
| Grade 1 n.a. | |
| 2 | n.a. / $9.00 |
| 3 1st cut—felting | 8.50/ 7.50 |
| 4 | 7.00/ 5.00 |
| 5 | 4.50/ 3.50 |
| 6 * 2nd cut—chemical | 3.00/ 3.00 |
| 7 | 3.00/ 3.00 |

* Based on 73% cellulose.

### Bagging

(Prices to Dealers, F.o.b. N. Y.)

| | Per 100 lbs. |
|---|---|
| Foreign Gunny | $3.65/ 3.85 |
| Heavy Wool Tares | 4.00/ 4.25 |
| Foreign Scrap Burlap | 2.75/ 3.00 |
| Austr. Wool Pouches | 3.50/ 4.00 |
| Domestic Manila Rope | 6.50/ 7.00 |
| Domestic No. 1 Sisal Strings | 5.00/ 5.25 |

## WASTE PAPER MARKET

**Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range or volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal. See TRENDS.**

| | New York Dec. 26 | Boston Dec. 26 | Chicago Dec. 1 | Los Angeles Dec. 2 |
|---|---|---|---|---|
| No. 1 Mixed Paper | $11.00/ 12.00 | $10.00/ 11.00 | $12.00/ — | $14.00/ — |
| No. 1 News | 12.00/ 13.00 | 12.00/ 14.00 | 17.00/ — | 14.00/ — |
| Overissue News | 16.00/ 20.00 | 14.00/ 16.00 | 22.00/ — | 14.00/ — |
| Mill Wrappers | 14.00/ 17.00 | 12.00/ 13.00 | 15.00/ — | 13.00/ — |
| Old Corrugated | 16.00/ 18.00 | 15.00/ 16.00 | 20.00/ — | 21.00/ — |
| Double Kraft Ld. Corr. Cuts | 35.00/ 47.50 | 37.50/ 47.50 | 40.00/ 45.00 | 25.00/ 35.00 |
| 100% Kraft Corr. Cuts | 57.50/ 60.00 | 50.00/ 60.00 | 60.00/ — | 45.00/ — |
| No. 1 Brown Kraft | 30.00/ 35.00 | 35.00/ 45.00 | 25.00/ — | 45.00/ — |
| Triple Sorted Brown Kraft | 35.00/ 40.00 | 42.50/ 50.00 | — / — | 45.00/ — |
| New Br. Kraft Env. Cuts | 70.00/ 77.50 | 65.00/ 77.50 | 65.00/ — | 45.00/ 50.00 |
| New Br. Kraft Bag Waste | 62.50/ 70.00 | 65.00/ 75.00 | 70.00/ — | 35.00/ 40.00 |
| No. 1 Gdwd. Shvs. | 18.00/ 20.00 | 25.00/ 30.00 | 22.00/ — | 27.00/ — |
| White Newsblanks | 55.00/ 65.00 | 50.00/ 60.00 | 40.00/ — | 55.00/ 60.00 |
| No. 1 Soft Wht. Shvs. | 65.00/ 70.00 | 70.00/ 80.00 | 60.00/ — | — / — |
| Hd. Wht. Shvs. | 95.00/110.00 | 95.00/110.00 | 85.00/ — | 95.00/ — |
| Hd. Wht. Env. Cuts | 120.00/130.00 | 110.00/125.00 | 100.00/ — | 105.00/ — |
| Col. Tab. Cards | 47.50/ 57.50 | 55.00/ 60.00 | 50.00/ — | 24.00/ — |
| Manila Tab. Cards, bales | 75.00/ 80.00 | 75.00/ 85.00 | 70.00/ — | 47.50/ — |
| Mixed Ledger | 40.00/ 45.00 | 40.00/ 50.00 | 50.00/ — | 28.00/ — |
| White Ledger | 57.50/ 65.00 | 60.00/ 65.00 | 65.00/ — | 42.00/ — |
| No. 1 Book & Mag.† | 18.00/ 20.00 | 18.00/ 22.50 | 15.00/ — | — / — |
| No. 1 Rep'd. Hvy. Books‡ | 30.00/ — | 25.00/ 35.00 | 30.00/ — | — / — |

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

# PRICES OF MATERIALS

| | | |
|---|---|---|
| **Aluminum sulfate:** | | |
| cml. bags, c.l. wks. | cwt. | $1.85 / — |
| iron-free, c.l. wks. | cwt. | 3.55 / — |
| **Casein, acid prec.:** | | |
| dom. sh. pt. c.l. | lb. | .27 / .37½ |
| imp. ex. dock | lb. | .21 / .25 |
| **Caustic soda:** | | |
| c.l. wks. solid, 76% | cwt. | 3.70 / — |
| flak. & grd. 400-lb. drums, c.l. | | 4.10 / — |
| liquid 50% tanks | | 2.55 |
| liquid 70% tanks | | 2.65 |
| **China clay:** | | |
| dom. air-float, c.l. wks. | ton | 10.00 |
| water-washed, lump, filler | ton | 11.00 |
| coating | ton | 17.60 /30.50 |
| imported, ex. whse. | short ton | 16.00 /29.50 |
| **Chlorine:** | | |
| single-unit tanks, works | cwt. | 2.93 / — |
| multiple unit, 2-5 cars per yr. | | 3.83 / 5.00 |
| **Formaldehyde:** | | |
| USP, inh. dms. c.l. wks | lb. | .0666/ — |
| l.c.l., E. wks. | lb. | .071 / — |
| **Fuel oil:** | | |
| Bunker C, No. 6 hvy. tanks, N.Y. harbor | bbl. | 2.25 / 2.28 |
| **Lime:** | | |
| hydrated bags, wks. | tons | 14.50 /15.50 |
| **Gum rosin:** | | |
| K, M, N, drms, c.l. Savan. | cwt. | 7.72 / 7.80 |
| **Rosin size:** | | |
| 70%, gum & pale grds., tank cars, south, sh. pt. | cwt. | 6.60 / 6.65 |
| **Salt cake:** | | |
| dom. bulk, c.l. wks. | ton | 19.00 / — |
| **Soda ash:** | | |
| light, 58%, bags, wks. | cwt. | 1.65 |
| bulk | cwt. | 1.35 |
| **Sodium silicate, 40° Be.:** | | |
| tank-cars, wks. | cwt. | 1.00 / — |
| drums, c.l. wks. | cwt. | 1.35 / — |
| 42° Be. WW, | | |
| tank-cars, wks. | cwt. | 1.60 / — |
| drums, c.l. wks. | cwt. | 1.95 / — |
| **Sodium peroxide:** | | |
| dms. c.l. E. of Miss. | lb. | .186 |
| l.c.l. do | lb. | .191 / .201 |
| **Soybean, protein:** | | |
| chem. isol., wks. c.l. bags | lb. | .23 / .23½ |
| **Sulphuric acid:** | | |
| 60° Be. cbys. c.l. wks. | cwt. | 1.75 / 2.00 |
| l.c.l. wks. | cwt. | 2.30 / 2.45 |
| tank-cars, wks. | ton | 16.30 /18.60 |
| **Sulphur:** | | |
| crude, c.l. mines, contract, | long ton | 25.50 /27.50 |
| f.o.b. vessels Gulf | do. | 27.50 /30.50 |
| **Sulphur dioxide:** | | |
| liquid, coml. cyl., wks. | lb. | .09 |
| multi-unit cars | lb. | .0535 |
| **Starches:** | | |
| corn, multiwalls, c.l. prod. plant: | | |
| pearl | cwt. | 6.39 / — |
| white, dextrines | cwt. | 7.78 / — |
| chlorinated | cwt. | 8.14 / — |
| potato, Idaho, c.l. wks. | cwt. | 6.50 / — |
| potato, Maine, f.o.b. wks. | cwt. | nominal |
| **Talc:** | | |
| domestic, sacks, c.l. wks. | ton | 25.00 /30.00 |
| **Titanium dioxide:** | | |
| anatase, c.l. deld. E. bags | lb. | .22½/ .23 |
| l.c.l. deld. | lb. | .23½/ .24 |
| rutile, c.l. deld. | lb. | .24½/ .25 |
| l.c.l. deld. | lb. | .25½/ .26 |

## NEW LITERATURE

**Permutit Precipitator.** (Bulletin 2204B) Describes principles of operation, design features, applications and advantages. Also provides specifications and flow diagrams of three basic designs. The Permutit Co., 330 W. 42nd street, New York 36, N. Y.

**Spraying Systems.** (Catalogue 24) Provides illustrations and description of thousands of standard and special industrial spray nozzles. The index has six main headings, Hollow Cone, Full Cone, Square Spray, Flat Spray, Straight Stream and Air Atomizing. Also includes tables on spray coverage and pipe frictions. Spraying Systems Co., 3201 Randolph street, Bellwood, Ill.

**U.S. Motors with Lubriflush.** (Bulletin 1848) Contains colored illustrated sales copy on three principal types of bearings with explanations of function of each. U. S. Electrical Motors Inc., Box 2058, Los Angeles 54, Calif.

**Agitated Kettles.** (Brochure) Provides illustrated sales copy on standard line, and agitation elements, engineering drawings, charts, tables and graphs. Colonial Iron Works Co., 17643 St. Clair Avenue, Cleveland 10, Ohio.

**Brown Co. Products in Review.** (Reprint) Includes first two of a series of articles which appeared in The Brown Bulletin—The Story of Pulp and The Story of Paper. Brown Co., Berlin, N. H.

**Coffing's Challenger.** (Bulletin CH) Describes light-weight spur gear hoist of formed steel construction that features easy portability and resistance to shock load breakage. Also includes cutaway drawing, dimension drawings and specifications for the ½, 1 and 2-ton models. Coffin Hoist Co., 800 Walter Street, Danville, Ill.

**Barber-Colman Electronic Outdoor Reset Hot Water Controls.** (Catalogue F-6167) Contains design and operating information, charts, ratio tables, photographs of equipment. Barber-Colman Co., Rockford, Ill.

**Hyster YT-40 Lift Truck.** (Bulletin 1284) Includes actual on-the-job photos, operating data, specifications, and complete description. Hyster Co., 2902 N. E. Clackamas street, Portland 8, Ore.

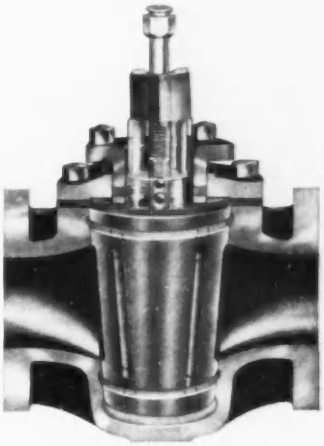
**Simplex Type CCAV Valve.** (Brochure) Discusses purpose, design and operation of the CCAV valve, with four engineering drawings illustrating the variations. Simplex Valve & Meter Co., 68th & Upland streets, Philadelphia 42, Pa.


# Three Reasons WHY

## ROCKWELL-Nordstrom VALVES ARE BEST FOR PAPER MILL SERVICES

1. **LUBRICANT-SEALED CLOSURE**

In a Rockwell-Nordstrom valve, lubricant-filled grooves surround seat ports preventing flow of the line fluid between plug and body. The pressurized lubricant in these grooves assures freedom from both internal and external leakage.



Cutaway View of Nordstrom Corrosion-Resistant Valve

2. **SMOOTHLY CONTOURED PASSAGEWAY**

The interior of a Rockwell-Nordstrom valve presents an unbroken surface devoid of crevices or cavities in which sediment can collect. This straight-through flow also means there is very little pressure drop through a Nordstrom valve.

3. **CORROSION-RESISTANT METALS**

Rockwell-Nordstrom valves are fabricated in a wide range of corrosion-resistant metals—each specifically suited to withstand the action of certain chemicals, temperatures and pressures. These corrosion-resistant metals mean many additional years of trouble-free valve performance.

These are only three of the many advantages of Nordstrom valves for paper mill services. If you would like further information on Rockwell-Nordstrom Corrosion-Resistant valves, write today for your free copy of bulletin V-217 to Rockwell Manufacturing Company, Pittsburgh 8, Pa.

*Canadian Licensee: Peacock Brothers Limited*

## ROCKWELL-Nordstrom VALVES

*Lubricant-Sealed for Positive Shut-Off*

ROCKWELL MANUFACTURING COMPANY 5434A
400 N. Lexington Avenue, Pittsburgh 8, Pa.
Please rush my copy of *Nordstrom Corrosion-Resistant Valves, bulletin V-217* to:

Name_____
Company_____
Address_____
(Street)
(City) (Zone) (State)

# PAPER TRADE JOURNAL CLEARING HOUSE PAPER TRADE JOURNAL

**RATES FOR ADVERTISING** (PAYABLE IN ADVANCE)

$.75 cents per line (6 words to line) minimum charge $3.75
—Additional charge of 70 cents if box number is used

Situation wanted advertisements can be repeated for ½ rate

Space in this section can also be purchased at $5.00 per column inch—(1" x 2¼")

Address replies to advertisements appearing under Box Number in care of **PAPER TRADE JOURNAL, 15 West 47th Street, New York 36, N. Y.**

## HELP WANTED

### POSITIONS OPEN

We can place—Mill mgr. rag content papers; mgr., waxed paper converting plant; asst. supt., dissolving pulp mill; asst. supt. kraft pulp mills; supt. coating division, mgr. school supplies converting division.

Master Mechanics, plant and mechanical engineers, draftsmen; design and development engineers; chemists, chem. engineers and technical director; Yankee, Fourdrinier and Cylinder mach. foreman (several); finishing foreman large mill; salesmen (Several).

LIST YOUR APPLICATION WITH US. IT WILL BE CONFIDENTIAL.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
Phone. Liberty 2-6547 J-1

### SALESMAN WANTED

Firm in business over 50 years has opening for experienced salesman selling to paper mills. This is an addition to present staff. Telephone or write in confidence.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
Phone Liberty 2-6547 J-8

### TOUR FOREMAN (BOSS MACHINE TENDER)

FOR THREE MACHINE GROUNDWOOD SPECIALTY MILL IN NORTHEAST. PREFERABLY MAN NOW WORKING AS FFOURDRINIER MACHINE TENDER WITH GOOD BACKGROUND OF EXPERIENCE IN GROUNDWOOD PRINTING GRADES. AGE 35 TO 40. GOOD OPPORTUNITY WITH HIGH STARTING SALARY. A-1 INSURANCE AND PENSION PLANS. EXCELLENT LIVING CONDITIONS. ADDRESS BOX 53-526 CARE PAPER TRADE JOURNAL.
J-15

### Plant Manager

Capable of taking full charge of production and processing in a mill making high grade specialties. Must have administrative ability and be able to handle labor relations. Please give full details as to experience, previous employment and technical training, if any. This is a good opportunity for the right person. Address Box 53-512 care Paper Trade Journal.
J-1

WANTED—Quality Control Engineer to install and supervise quality control group in corrugated box division of Midwestern Plant. Young man with experience in both quality control and production preferred. Address Box 53-354 care Paper Trade Journal. TF

## HELP WANTED

## HELP WANTED

### SUPERVISORY AND TECHNICAL POSITIONS

### BOWATERS SOUTHERN PAPER CORPORATION

**GENERAL**—Construction of the $55,000,000.00 Bowaters pulp and newsprint mill is well advanced. This mill at Calhoun, Tennessee is conveniently located to established communities offering excellent residential facilities and easy access to major cities.

### POSITIONS TO BE FILLED IN IMMEDIATE FUTURE

**FINISHING & SHIPPING SUPERINTENDENT**

To direct roll finishing and shipping operations for 130,000 tons of newsprint annually and loading and shipping of baled pulp. Candidates should have had comparable responsibility, particularly in roll finishing operations. Subordinate staff to include Assistant Superintendent and Order Clerk.

**WOOD HANDLING AND YARD SUPERINTENDENT**

To assume full responsibility for receiving, barking, chipping and storage of pulpwood at rate of 250,000 cords annually. Previous supervisory experience in directing operations of heavy mechanical equipment, cranes, bulldozers, etc. is required. Subordinate staff to include salaried Tour Foremen.

**CURRENT VACANCIES EXIST IN PAPER MILL, SULPHATE, GROUNDWOOD, SHIPPING, YARD, TECHNICAL, ENGINEERING, WAREHOUSE AND PURCHASING, AND INDUSTRIAL RELATIONS DEPARTMENTS AS FOLLOWS:**

**ALL OPERATING DEPARTMENTS**

Assistant Superintendents
Tour Foremen

**ENGINEERING DEPARTMENT**

Maintenance and Design Engineers
Master Mechanic
Millwright Foreman
Pipefitter Foreman
Electrical Foreman
Shop Foreman
Lubrication Foreman
Carpenter and Painter Foreman

**PURCHASING AND WAREHOUSE**

Head Storekeeper
Purchase and Warehouse Office Personnel

**TECHNICAL DEPARTMENT**

Assistant Superintendent
Chief Chemist
Control Chemist
Laboratory Foreman

**INDUSTRIAL RELATIONS**

Safety Supervisor

All applications will be acknowledged and will be treated in strictest confidence.

**Address: Industrial Relations Department**
**Bowaters Southern Paper Corporation.**
**Calhoun, Tennessee**

TF

**We wish you a HAPPY AND PROSPEROUS 1954 and thank you for helping us make 1953 the best of our 15 years in business.**

**We believe we have the largest inventory of used paper mill equipment available and the largest shop devoted exclusively to rebuilding paper mill machinery which will help us to serve you better in 1954.**

The following gives you an idea of the choice of available equipment we can offer you from stock.

1—134" Fourdrinier, Suction Press, 42" dia. Dryers, Calender Stack, Pope Type Reel, 2-Drum Winder, Drives.
1—88" Fourdrinier Machine Voith Inlet, Suction Couch, Suction Press, Straight-Away Press, Reversing Press, 34 Dryers, 26 ahead of Size Press, 8 after Size Press, Calender Stack, Pope Type Reel, Winder and complete Drive.
1—84" Bagley & Sewall Paper Machine with pick-up Felt, 8 Dryers 48" x 84", also baby dryer, top and bottom dryer felt equipment, 8-Roll Calender Stack, new rolls with Vickery Doctors, Pope Type Reel, Cameron Winder, complete drive also all auxiliaries to make complete mill.
1—Beloit 76" Machine same design and equipment as above.
1—72" Five-Cylinder Machine, 2 Main and 2 Primary Presses, 24 Dryers, 7-Roll Calender Stack, Vertical Reels, 2-Drum Winder.
1—54" Three Cylinder Machine, 2 Presses, 24 Dryers, Calender Stack, Reel, Winder, Drives.
1—30" Fourdrinier with two Presses, Dryers, 48" dia. 46" face, Calender Stack, Reels and Winder. Would make excellent experimental machine.

## DRYERS

9—42" dia., 132" face.
6—42" dia., 124" face.
6—48" dia., 118" face.
1—48" dia., 94" face.
8—48" dia., 84" face.
2—48" dia., 104" face.
11—36" dia., 48" face.
46—48" dia., 46" face.
12—Misc. odd face lengths.

## CALENDER STACKS

1—9-Roll, 120" face.
1—7-Roll, 86" face.
1—8-Roll, 82" face.
1—8-Roll, 72" face.
1—7-Roll, 72" face.
1—3-Roll, 64" face.

## WINDERS

1—194" Beloit 2-Drum with ball-bearing throughout, last run at 2350' per minute.
1—124" Moore & White 4-Drum with slitters.
1—102" Moore & White 4-Drum with slitters.
1—118" Beloit Slitters and Winder, anti-friction bearing equipped, 12 new top and bottom slitters, variable speed electric drive. Will run 2000 F.P.M., make 50" dia. rolls.
1—106" Langston Slitter & winder, anti-friction bearings, rebuilt to make 60" dia. rolls. Will run 2000 F.P.M.
1—86" Langston, two-drum with backstands, fully rebuilt will make 50" dia. rolls, designed for 12 to 1500 F.P.M.
1—86" Johnstone Score-cut new in 1949, used less than one year, anti-friction bearings.
1—108"Pusey & Jones 2-Drum Slitter & Winder, anti-friction bearings designed for 44" dia. rolls.
1—72" Bagley & Sewall Warren type Slitter & Winder.

## REELS

1—Heavy Black-Clawson 2-spool boxboard Reel, designed to make 60" dia. rolls. Will make width to fit your machine.
1—94" Pope Type Continuous Reel with 48" dia. drum, will make rolls up to 72" dia.
1—84" Bagley & Sewall Pope type Reel 36" dia. drum, will make rolls 50" dia.
1—Set 108" Bagley & Sewall two-spool Upright Reels.
1—76" Black-Clawson 2-spool Upright Reels.

## SHEET CUTTERS & TRIMMERS

1—76" Dayton Seybold Paper Trimmer.
1—56" Oswego Paper Trimmer.
1—48" Oswego Paper Trimmer.
1—46" Twentieth Century Paper Trimmer.
1—44" Oswego Paper Trimmer.
1—76" Hamblet Sheet Cutter, with 24-roll backstands, motor drive, Brannan folder.
1—82" Dillon Sheet Cutter with or without backstands.
1—106" Clark Aiken Sheet cutter.

## BEATERS

1—Dilts Breaker Beater, bandless roll 72" dia. 60" face, cast iron tub 35' long, 3000# capacity. Used very little.
2—Dilts New Type 1500# Beaters, cast iron tubs, rolls 56" dia., 48" face.
2—Dilts 1500# C. I. tub Beaters, rolls 62" dia. 54" face.
2—E. D. Jones High Speed Beaters, C. I. tubs, 2000# capacity, rolls 67" dia. 60" face.
2—Noble & Wood High Speed Beaters 1800#, C. I. Tubs, Rolls, 58" dia., 54" face. New in 1938.
2—Valley Iron Works High Speed Beaters 1500# capacity, C. I. tubs, rolls 56" dia., 48" face. New in 1938. Many others designed to fit your needs.

## JORDANS

1—Dillon No. 1 with new set stainless steel plug & shell fillings.
1—Noble & Wood Pony Monarch with anti-friction bearings, extra set new fillings, pin type coupling, 100 H.P. Synchronous motor & starting equipment.
1—Appleton No. 1, refillable plug, pin type coupling for direct connecting.
3—Noble & Wood Pony Jordans, Belt drive, fillings to suit.
1—Black Clawson Stubby Type Pony Jordan.
3—Noble & Wood Monarch Jordans, Belt driven, fillings to suit.

## STOCK PUMPS

1—8 x 20" Beloit Triplex Plunger Stock Pump.
2—8 x 18" Shartle Triplex.
2—8 x 18" Shartle Duplex.
1—8 x 12" Seneca Falls Triplex.
4—6 x 12" Moore & White Duplex.
1—8 x 10" Deane Triplex.
7—Warren S.O.B. Centrifugal.
4—Sandy Hill 8" inlet, 6" outlet.
2—Fredrick 12" inlet, 8" outlet.
50 Various makes and sizes, some with motors.

## BRASS FOURDRINIER, FELT ROLLS

40—5" dia., 148" face.
30—4½" dia., 148" face.
30—4" dia., 88" face.
24—3" dia., 84" face. (New)
20—6¾" dia., 96" face. (New)
12—2" dia., 120" face (New)
Will shorten these to fit your machine.

## BRASS COVERED PRESS ROLLS

1—17½" dia., 108' face.
1—18" dia., 150" face.
4—18" dia., 86" face.
1—19½" dia., 98" face, stonite.
1—18" dia., 96" face, stonite.
2—18" dia., 84" face.
Many others, all sizes.

## R. C. PRESS ROLLS

1—28" dia., 148" face, 1" new rubber.
2—18" dia., 148" face, 5/8" rubber.
2—18" dia., 132" face, 5/8" rubber.
2—20" dia., 72" face, ¾" rubber.
3—17½" dia., 27" face, ¾" rubber.
Over 200 others from 56" to 172", 14" dia. to 20", journals to fit your bearings.

## DRIVES

5—Beloit Double Reduction Angle Drives with Ryertex Bevel Pinion Gears, machine cut bull gears, 4½ to 1 ratio.
1—50 H.P. Falk 17.3 to 1, enclosed straight-through type.
6—New Philadelphia Gear Works Angle Drives, single and double reduction, 20 to 40 H.P. about 4.13 to 1 ratio.

## MISCELLANEOUS

5—New Felt Stretches 48" and 60" long with 1-7/16" bronze screws, anti-friction bearings.
1—8' dia., 10" deep, 5/16" steel welded Chest with enclosed gear driven agitator.
1—72" Hanchet Knife Grinder.
1—48" Hanchet Knife Grinder.
3—Shartle Agiflow Combination Pumps & Agitator anti-friction bearings bronze impellers.
1—48" Carthage Chipper.
20—6 to 14 plate Packer Screens, some with roller shoes.
2—No. 2-A Bird Screens, copper vats.
2—No. 2 Bird Screens Copper vats.
2—42" x 150", Hollow Shaft.
1—36" x 134", Hollow Shaft.
10—R. C. Couch Rolls from 12" to 24" dia., 72" to 124" face, good rubber.
80—11½" x 43" New or Rolled and Recut Screen Plates, cut .012 to .032.
2—Sets New Screen plates for No. 2 or 2-A Bird Screen, cut .10.
60—Motors, all 220/440 volt, 3 phase, 60 cycle, 5 H.P. to 100 H.P. Full details on request.
1—80" Black-Clawson Creping Machine with expansion reels and winder.

**The above is representative of our stock, however we have many items not listed. We can recondition every piece of equipment available and will guarantee you will be satisfied if you deal with,**

# OSBORNE PAPER MILL EQUIPMENT CORP.

FULTON, N. Y. Tel. 2-4254

## FOR SALE

**CAMERON SLITTERS**

2—72" Type 10-11 Shear-cut.
1—72" Type 10-10A.
1—62" Type 40-1-AF.
1—62" Type 9-5.
1—54" Type 28-30 Duplex.
1—42", 1—52" and 1—62" Type 10-5.
1—42" Type 26-2A.
1—42", 1—50" and 1—62" Type 6.

**OTHER SLITTERS**

1—102" Langston Mill Type Shear Cut. 46" Rewind.
1—90" Johnstone Mill Type Score Cut. 44" Maximum Rewind.
1—60" Langston Type A Shear-cut and 1—40" and 50" Duplex.
1—56" Chambon, Shear-cut.
1—48" Kidder Model CH Shear-cut.
1—40" Kidder Model SL Shear-cut.
1—30" Meisel Shear-Cut Series OP.
1—30" Model B Fales Slitter.

**POWER PAPER CUTTERS**

15—Seybold 50" Late Type Series 50. Electric Eye and Auto-spacing. 1—50" Precision, 40"-10Z. 39", 44", 54" & 84" 20th Century, 44", 56", 64", & 74" Daytons, 34", 48", 55" & 65" Holyokes.
5—Oswegos: 36", 44", 68", 74" & 84".

**PRINTING PRESSES**

1—41" 4 Color Nasko Flexographic Press. Roll to Roll with Drying Oven.
1—40" 4 Color Crawford Flexographic Press. Roll to Roll.
1—24" Kidder 4 Color Celloprinter.
2—36" x 48" 3-Color Kidder Late Type—Roll to Roll.
2—2-Color Kidder. Roll to Sheet. 30" x 40" & 36" x 48".

**MISCELLANEOUS MACHINES**

2—Lawtomatic Model A Toilet Roll Wrappers.
3—Die Presses, 1—#34—46" x 33" Sheridan Heavy Duty, 1—Hobbs 38" x 24" and 1—Seybold 38" x 24".
3—Waldron Embossers, 1—32", 1—34" and 1—60".
2—81" Dietz Toilet Paper Converters.
1—Knowlton Tube Winding Equip. Complete.
1—58" Paper Converting Machine Co's Single-Fold Towel Machine.
1—62" Potdevin Type Squeeze Roll Waxing Machine.
1—Weber Model 2CN Satchel Bottom Cellophane Bag Machine.
1—#101 Potdevin Sandwich Bag Machine.
1—Model 17 Matadore Bag Machine.
1—35" Waldron Gummed Paper Breaker.
1—36" and 1—55" Beck Rotary Sheeter.
1—66" Hamblet Single Rotary Sheeter with 6 Roll Backstand.
1—74" Black-Clawson Duplex Rotary Sheeter.
1—72" Brannon Folder for Ream Tissue.
3—Schultz Automatic Rewinders. 1—18", 1—24" and 1—48".
1—52" Perry Liner.
1—Hudson-Sharp Facial Tissue Folder for Boxed Tissue.
1—72" Black-Clawson Creping Machine with Reeves Drive.
1—60" Mills Machine Co. Creping Machine.

**PAPER AND PULP MILL MACHINERY**

3—Wet Machines, 1—36" x 84", suitable for manufacture of board, 2—36" x 86" Wet Machines suitable for groundwood lap.
1—8 Roll 124" Lobdell Calender Stack.
1—7 Roll 54" Holyoke Stack of Super Calenders with AC motor equipment.
1—100 " Hamblet Single Rotary Sheet Cutter, Maxson Overlapping Delivery, Erie 5 Pile Layboy, and 8 Roll Backstands.
1—150 " Belait Aldrich Type Drum Reel Oliver Filters, we have several to offer.
3—Noble & Wood Mastodon Jordans.
2—Brownell Variable Speed Engines, 10" x 12" and 12" x 14".
1—Bird & 1—Apmew Pulp Screen.
1—8'x6' Impco Washer-Thickener.
2—Three Pocket and 2—Four Pocket Pulpwood Grinders.
1—82" Pusey & Jones 2 Bowl Upright Reel.
1—#2 Lannoye Pulper.
7—1200 lb. and 4—2000 lb. Dilts Iron Tub Beaters.
3—#1 Claflin Refiners.
2—Model 8' and 1—Model 9' Wandel Dynopulper.
4—2000# N & W Pulpers, 100 HP AC Motors.
1—6x10 Moore & White and 1—9x16 Downingtown Duplex Stock Pumps.
1—122" Horse Single Sheeter. Heavy Duty.

**GIBBS-BROWER CO., INC.**
Please address reply to Room 902
21 E. 40th Street, New York 16, N. Y.
Telephone Murray Hill 5-7824 J-1

## HELP WANTED

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| 125 | West. | | 277 | Syn. |
| 100 | G.E. | IM | 450 | S.R. |
| 100 | West. | | 900 | Syn. |
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Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**DRUM WINDERS**
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
Rice Barton Corporation

**DRYER ROLL PYROMETER**
Midwest Fulton Mch. Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**DUSTERS**
Appleton Machine Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Waldron, John, Corp.

**DUSTING BRUSHES**
M. W. Jenkins Sons, Inc.

**DYESTUFFS**
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuff Corp.

**ELECTRIC HYDROMETER**
Testing Machines, Inc.

**ELECTRIC HYGROMETER**
Thwing-Albert Instrument Co.

**ELECTRICAL PRECIPITATORS**
Research Corporation

**EMBOSSING MACHINES**
Dilts Machine Works
Egan, Frank W., & Co.
Paper Converting Machine Co.
John Waldron Corp.

**EMBOSSING ROLLS**
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

**EMPLOYMENT SERVICE**
Bixby, R. W., Inc.
Raymond, Chas. P., Service, Inc.

**EMULSIFIERS**
Antara Chemicals Division, General Dyestuff Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp.

**ENZYMES**
Vanderbilt Co., R. T.

**EVAPORATORS**
Goslin-Birmingham Mfg. Co., Inc.
Jackson & Church Co.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.
Westinghouse Electric Corp.

**EXPANDERS**
Mount Hope Machinery Co.

**EXTRACTOR PLATES**
Mundt, Chas., & Sons

**FANS**
Buffalo Pumps, Inc.
General Electric Co.
B. F. Perkins & Son, Inc.
Roots-Connersville Div.
Ross Engineering Co., J. O.
Westinghouse Electric Corp.

**FEEDERS**
Jeffrey Mfg. Co.
Merrick Scale Mfg. Co.

**FELTS**
Albany Felt Co.
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Knox Woolen Company
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Williams-Gray Co.

**FELT CLEANERS**
Antara Chemicals Division, General Dyestuff Corp.
Calgon, Inc.
Nopco Chemical Co.

**FELT CONDITIONERS**
Bird Machine Co.
Downingtown Mfg. Co.
Mount Hope Machinery Co.
Rice Barton Corporation
The Sandy Hill Iron & Barss Works

**FELT EXPANDERS**
Mount Hope Machinery Co.

**FELT GUIDES**
Black Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Noble & Wood Machine Co.
Mount Hope Machinery Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**FELT PRESERVERS**
Mount Hope Machinery Co.

**FIBRE BOARD MACHINES**
Black Clawson Company
Sandy Hill Iron & Brass Works

**FILLERS**
American Cyanamid Company, Industrial Chemicals Division
J. M. Huber Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**FILLINGS**
John W. Bolton & Sons, Inc.
Chartle Brothers Machine Co.

**FILTER MEDIA**
Hungerford & Terry, Inc.
Palmer Filter Equipt. Co.

**FILTERS**
Bird Machine Company
Bulkley, Dunton Processes, Inc.
Holyoke Machine Co.
Hungerford & Terry, Inc.
Improved Machinery Inc.
Johnson Corp.
Moore & White Co.
Ronningen Engineering Sales
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Walworth Company

**FILTERS, LIME MUD**
Bird Machine Company

**FILTER SCREENS**
Mundt, Chas., & Sons
Ronningen Engineering Sales

**FINE SCREENS**
Bird Machine Company
Mundt, Chas., & Sons
Sandy Hill Iron & Brass Works

**FITTINGS**
The Bagley & Sewall Company
Crane Company
Grinnell Company
Pittsburgh Piping & Equipt. Co.
Shartle Brothers Machine Co.
Walworth Company

**FLEXIBLE COUPLINGS**
Dodge Manufacturing Corp.
Egan, Frank W., & Co.
Elliott Company, Inc.
Jeffrey Mfg. Co.
Shartle Brothers Machine Co.
John Waldron Corp.
Westinghouse Electric Corp.

**FLOORING, GRATING AND TREADS**
The Goodyear Tire & Rubber Company
Norton Co.

**FLOTATION EQUIPMENT**
Denver Equipment Co.
Walker Process Equipment, Inc.

**FLOW BOXES**
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**FLUID FILTERS**
Ronningen Engineering Sales

**FOLDERS**
Emerson Mfg. Co.

**FORK LIFT TRUCKS**
Elwell Parker Elec. Co.

**FORMATION TESTERS**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**FOURDRINIERS**
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**FREENESS TESTERS**
Testing Machines, Inc.
Williams Apparatus Co.

**GASKETS**
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

**GEAR MOTORS**
Elliott Company, Inc.
Westinghouse Electric Corp.

**GEAR REDUCERS**
Dodge Mfg. Corp.
Downingtown Mfg. Co.

**GEAR REDUCER DRIVES**
Link Belt Co.

**GEARS**
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

**GRAPPLES**
Blaw-Knox Company
Owen Bucket Co.
Wellman Engrg. Co.

**GRINDERS**
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Hanchett Mfg. Co.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

**GRINDING WHEELS**
Norton Company
Simonds Abrasive Co.

**GUIDES**
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Co.
Downingtown Mfg. Co.
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works
Waldron, John, Corp.

**GUMMING MACHINES**
Dilts Machine Works
Egan, Frank W., & Co.
Paper Converting Machine Co.
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

**GUMS**
Hercules Powder Co., Inc.
National Starch Products, Inc.

**HEAT EXCHANGERS AND RECOVERY SYSTEMS**
Westinghouse Electric Corp.

**HEATING, VENTILATING & AIR CONDITIONING**
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
Jackson & Church Co.
Jamar Olmen Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Valley Iron Works Co.
Westinghouse Electric Corp.

**HONING KIT**
John W. Bolton & Sons, Inc.

**HOSE (Air, Water, Suction, etc.)**
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

**HUMECTANTS**
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**HYDRAULIC OSCILLATING SHOWERS**
Ronningen Engineering Sales

**HYDRAULIC TURBINES & ACCESSORIES**
James Leffel Co.

**IMPREGNANTS**
American Cyanamid Company, Industrial Chemicals Division
Sun Oil Company
B. F. Goodrich Chemical Co.

**INDENTING MACHINES**
Dilts Machine Works

**INDUSTRIAL CONTROL**
Westinghouse Electric Corp.

**INDUSTRIAL TIRES**
B. F. Goodrich Co.

**INDUSTRIAL TRACTORS**
Towmotor Corp.

**INKOMETER**
Thwing-Albert Instrument Co.

**INSTRUMENTS, TESTING AND MEASURING**
Black-Clawson Co.
General Electric Co.
W. & L. E. Gurley
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Tracerlab, Inc.
Westinghouse Electric Corp.

**INSULATION**
Insul-Mastic Corp. of America

**JACKETS**
Emerson Mfg. Co.

**JOINTS**
The Bagley & Sewall Company
Beloit Iron Works
Cram Associates
Downingtown Mfg. Co.
Johnson Corp.
Moore & White Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**JORDANS**
Emerson Mfg. Co.
Shartle Brothers Machine Co.

**JORDAN FILLINGS**
Appleton Machine Co.
Bahr Bros. Manufacturing Co.
John W. Bolton & Sons, Inc.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**KILNS**
Jackson & Church Co.
F. L. Smidth & Co.

**KNIVES**
Black Clawson Company
John W. Bolton & Sons, Inc.
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

**KNOTTERS**
Black Clawson Company
Improved Machinery, Inc.
Sandy Hill Iron & Brass Works

**LABORATORY CORRUGATOR**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**LABORATORY EQUIPMENT**
Appleton Machine Co.
Bauer Brothers Co.
Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
Downingtown Mfg. Co.
W. & L. E. Gurley
Egan, Frank W., & Co.
Hermann Mfg. Co.
Jackson & Church Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Taylor Instrument Companies
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Valley Iron Works Co.
Waldron, John, Corp.

**LAMINATING MACHINES**
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Paper Converting Machine Co.
Rice Barton Corporation
Waldron, John, Corp.

**LAY BOYS**
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

**LINTER PULP**
Hercules Powder Co., Inc.

**LUBRICANTS**
Cities Service Oil Co.
Gulf Oil Corp.
Sinclair Refining Co.
Socony-Vacuum Oil Co.
The Texas Company

**MACHINERY, CARBON PAPER**
Haida Engineering Co.

**MAGAZINE REELS**
Dilts Machine Works

**MAGNETIC SEPARATORS**
Bauer Bros. Co.
Eriez Manufacturing Co.
Shartle Brothers Machine Co.

**MATERIALS HANDLING**
Dilts Machine Works
Downingtown Mfg. Co.
Ederer Engrg. Co.
Jeffery Mfg. Co.
Link Belt Co.
Shartle Bros. Mch. Co.
Towmotor Corp.
The Wellman Engrg. Co.

**MICROMETERS & CALIPERS**
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

**MIXERS**
Jackson & Church Co.
Mixing Equipment Co.
Walker Process Equipment, Inc.

**MICRO-CRYSTALLINE WAXES**
Sun Oil Company

**MOISTURE CONTENT CONTROL**
Testing Machines, Inc.

**MOISTURE METERS**
Testing Machines, Inc.

**MOTORS**
Elliott Company
Moorhead Elec. Machy. Co.

**MOTORS AND GENERATORS**
Elliott Company, Inc.
General Electric Company
Moorhead Elec. Machy. Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corp.

**NICKEL AND NICKEL ALLOYS**
The International Nickel Co.

**PACKING BOXES**
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

**PADDLE SCREENS**
Mundt, Chas., & Sons

**PAPER CONDITIONERS**
Vapo Systems Co.

**PAPER MACHINE DRIVES**
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Co.
Dowington Mfg. Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works
Westinghouse Electric Corp.

**PAPER MACHINES**
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Company
Downington Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Manchester Machine Co.
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machinery Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**PAPER MACHINE SLICES**
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

**PAPER MILL MACHINERY**
Ronningen Engineering Sales

**PAPER TUBE MACHINERY**
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Paper Converting Machine Co.

**PARAFFINE WAXES**
Sun Oil Company

**PARAFFIN WAX EMULSIONS**
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Nopco Chemical Co.

**PASTING MACHINES**
Beloit Iron Works
Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**PERFORATED SCREENS**
Chas. Mundt & Sons

**PEBBLE MILLS**
F. L. Smidth & Co.

**pH METERS**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**PIPE**
Armco Drainage & Metal Products, Inc.
Babcox & Wilcox Co.
Crane Company
Grinnell Company
National Tube Co.
Walworth Company

**PIPE FABRICATORS**
Pittsburgh Piping & Equipt. Co.

**PIPE FITTINGS**
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Pittsburgh Piping & Equipt. Co.
Walworth Co.

**PIPING, HIGH PRESSURE**
Pittsburgh Piping & Equipt. Co.

**PITCH CONTROL**
American Cyanamid Company, Industrial Chemicals Division
Antara Chemicals Division, General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.

**PLASTICIZERS**
American Cyanamid Company Industrial Chemicals Company
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Jackson & Church Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

**PLATERS**
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

**PLATES**
Armco Steel Corp.
Babcock & Wilcox Co.
Lukenweld Division
Lukens Steel Company
L. O. Ross Engrg. Corp.
Timken Roller Bearing Co.

**PLUGS**
The Appleton Machine Co.
Black Clawson Company
Emerson Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

**POPE TYPE REELS**
Black-Clawson Company
Downingtown Mfg. Co.
Egan, Frank W., & Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works

**PRESERVATIVES**
Antara Chemicals Division, General Dyestuff Corp.
E. I. du Pont de Nemours & Co.

**PRESS ROLLS**
Beloit Iron Works
Black-Clawson Co.
Downingtown Mfg. Co.
Goodrich, B. F., Company, Inc.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works
Stowe-Woodward Inc.

**PRESSURE FILTERS**
Holyoke Machine Co.
Hungerford & Terry, Inc.
Jackson & Church Co.
Ronningen Engineering Sales
Sandy Hill Iron & Brass Works

**PRESSURE VESSELS**
Chicago Bridge & Iron Co.
A. O. Smith Corp.

**PRESSES**
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Heinrich, H. H., Co.
Hudson-Sharp Machine Co.
Jackson & Church Co.
Manchester Machine Co.
The Moore & White Co.
Paper Converting Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Testing Machines, Inc.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

**PROTECTIVE COATINGS**
Insul-Mastic Corp. of America

**PULLEYS**
Bird Machine Company
Black-Clawson Co.
Dodge Mfg. Corp.
Rice Barton Corporation
Sandy Hill Iron & Brass Works

**PULP CLASSIFIER**
The Bauer Bros. Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**PULP CLEANERS**
Bauer Bros. Co.
Bird Machine Co.
Nichols Engrg. & Research Corp.
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

**PULP REFINERS**
Emerson Mfg. Co.
Shartle Bros. Machine Co.

**PULP SCREENS**
Bird Machine Co.
Mundt, Chas. & Sons
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

**PULP STOCK VALVES**
Crane Company
Grinnell Company
Murray, D. J., Mfg. Co.
Record Fdy. & Mach. Co.
Rice Barton Research Corp.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**PULP WASHERS**
Mundt, Chas. & Sons
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

**PULPERS**
Apmew, Inc.
Bauer Brothers Co.
Cowles Company
Curlator Corp.
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
Rice Barton Research Corp.
Shartle Brothers Machine Co.

**PULPS**
Brown Company
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.
Restigouche Co., Ltd.

**PULPSTONES**
Norton Company

**PULP TESTERS**
Testing Machines, Inc.
Williams Apparatus Co., Inc.

**PULP TREATING**
Curlator Corp.

**PULVERIZING MILLS**
Jeffery Mfg. Co.
F. L. Smidth & Co.

**PUMP VALVE BALLS**
Stowe-Woodward Inc.

**PUMPS**
Apmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
DeLaval Steam Turbine Co
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Ronningen Engineering Sales
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**RADIAL SCREENS**
Chas. Mundt & Sons

**RADIANT BURNERS**
Red-Ray Mfg. Co., Inc.

**RAG COOKING PROCESSES**
General Dyestuff Corp.

**RAG CUTTERS**
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

**RECOVERY SYSTEMS**
Babcock & Wilson Co.
Chicago Bridge & Iron Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Peabody Engrg. Corp.
Pusey & Jones Corp
Ross Engineering Corp., J. O.
Valley Iron Works Co.
Vulcan Copper & Supply Co.

**REELS**
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson-Sharp Mch. Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.
Waldron, John, Corp.

**REFINERS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Curlator Corp.
Dilts Machine Works
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hermann Mfg. Co.
Jackson & Church Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

**REFRACTORIES**
Harbison-Walker Refractories Co.

**REGULATORS**
Apmew, Inc.
Bird Machine Company
General Electric Co.
Improved Machinery Inc.
Johnson Corp.
Poirier Control Company
Shartle Brothers Machine Co.
Taylor Instrument Companies
Westinghouse Electric Corp.

**RESINS**
American Cyanamid Company, Plastics & Resins Division
Borden Company
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Koppers Company, Inc.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Reichhold Chemicals, Inc.

**ROLLS**
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Emerson Mfg. Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
B. F. Goodrich Co.
Holyoke Machine Co.
Lindsay Wire Weaving Co.
Lobdell United Co.
Manchester Machine Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stowe-Woodward Inc.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

**ROLL COVERS**
The Goodyear Tire & Rubber Company
Stowe-Woodward Inc.

**ROLL HANDLING EQUIPMENT**
Dilts Machine Works

**ROLL STANDS**
Cameron Machine Co.
Dilts Machine Works
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

**ROPE CARRIERS**
Black Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

**ROTARY KILNS**
F. L. Smidth & Co.

**ROTARY SCREENS**
Bird Machine Company
Chas. Mundt & Sons

**ROTARY STEAM JOINTS**
Johnson Corp.
The Moore & White Co.
Rice Barton Corporation
Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

**RUBBER COVERED ROLLS**
Stowe-Woodward Inc.

**RUBBER PRODUCTS**
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company
Stowe-Woodward Inc.

**SAMPLE CUTTER**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**SATURANTS**
B. F. Goodrich Chemical Co.

**SATURATING MACHINES**
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

**SAVEALLS**
Bird Machine Company
Bulkley, Dunton Processes, Inc.
Chicago Bridge & Iron Co.
Improved Paper Machinery Corp.
Moore & White Co.
Shartle Bros. Machine Co.
Walker Process Equipment, Inc.

**SAWS**
Simonds Saw & Steel Co.
Moore & White Co.

**SCALES**
Merrick Scale Mfg. Co.
Testing Machines, Inc.

**SCREEN PLATES**
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Mundt, Chas. & Sons
Testing Machines, Inc.

**SCREENS**
Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Mundt, Chas. & Sons
Murray, D. J., Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**SCREENS, CHIP (Vibrating)**
Link Belt Co.

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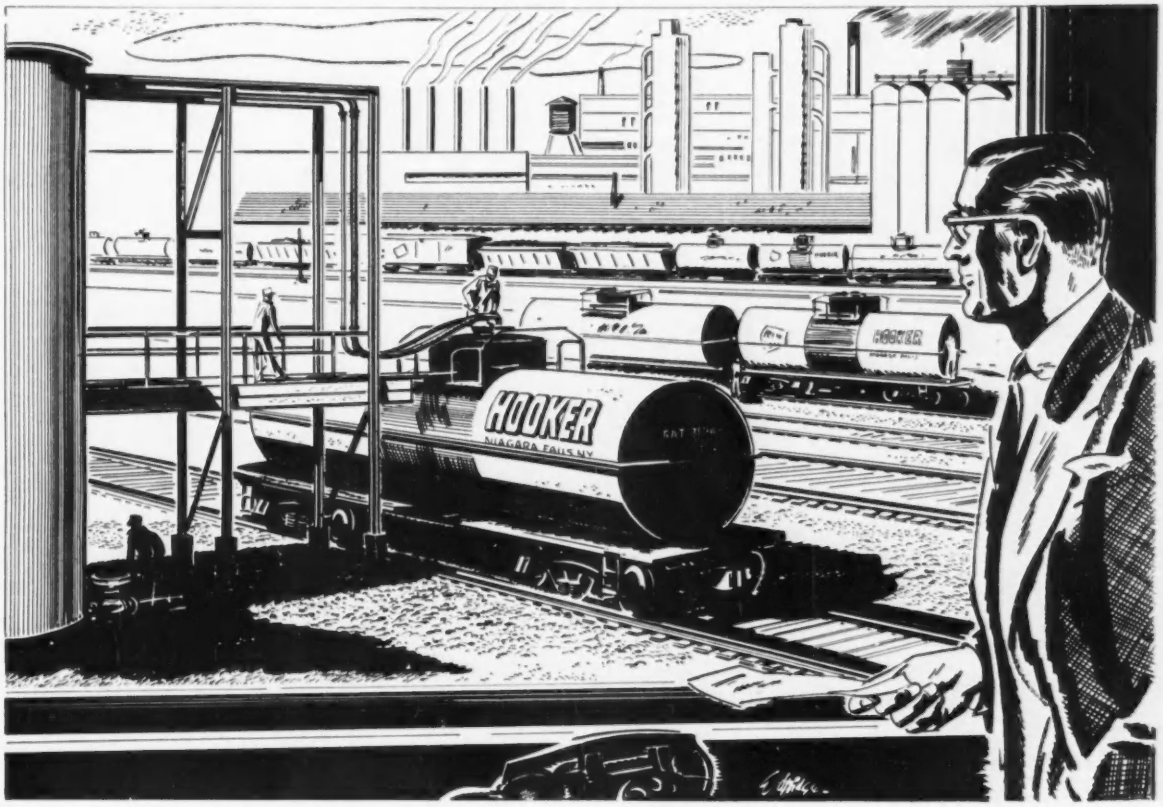


# For smoother, better processing—

# buy the Uniformity Hooker Caustic Soda gives you

Month after month, year after year—you can standardize processing methods, and get consistent results, when you use Hooker Caustic Soda.

You need never adjust your process to meet variations in caustic soda shipments. You can be sure each new shipment closely matches your current inventory.

Uniformity, from shipment to shipment, is the result of close quality checking at Hooker. More than a score of inspections and analyses safeguard the uniformity of the Hooker caustic you buy.

Do you agree, with leading companies in 30 different industries, that this is a good reason to *standardize* on Hooker caustic soda?

If you do, a letter or a phone call to the nearest Hooker plant or office will quickly bring you the product data and other facts you need to make your decision.

**You can *standardize* on Hooker Caustic Soda**

*Forms:* Liquid 50% and 73% • Flake • Solid • Special fine flakes

*Containers:* Tank cars • Tank wagons • Barges • Drums

***For fast service, phone:***

| | |
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| CHICAGO | CEntral 6-1311 |
| LOS ANGELES | NEvada 6-3826 |
| NEW YORK | MUrray Hill 2-2500 |
| NIAGARA FALLS | 6655 |
| TACOMA | Broadway 1215 |

HOOKER CHEMICALS

*From the Salt of the Earth*

**HOOKER ELECTROCHEMICAL COMPANY**

**HOOKER ELECTROCHEMICAL COMPANY**
**6 Union St., Niagara Falls, N. Y.**

Please send ☐ data sheets on Hooker Caustic Soda; ☐ Bulletin 100 describing Hooker products and services.

Name ..... Title .....

Company .....

Address .....

City ..... Zone ..... State .....

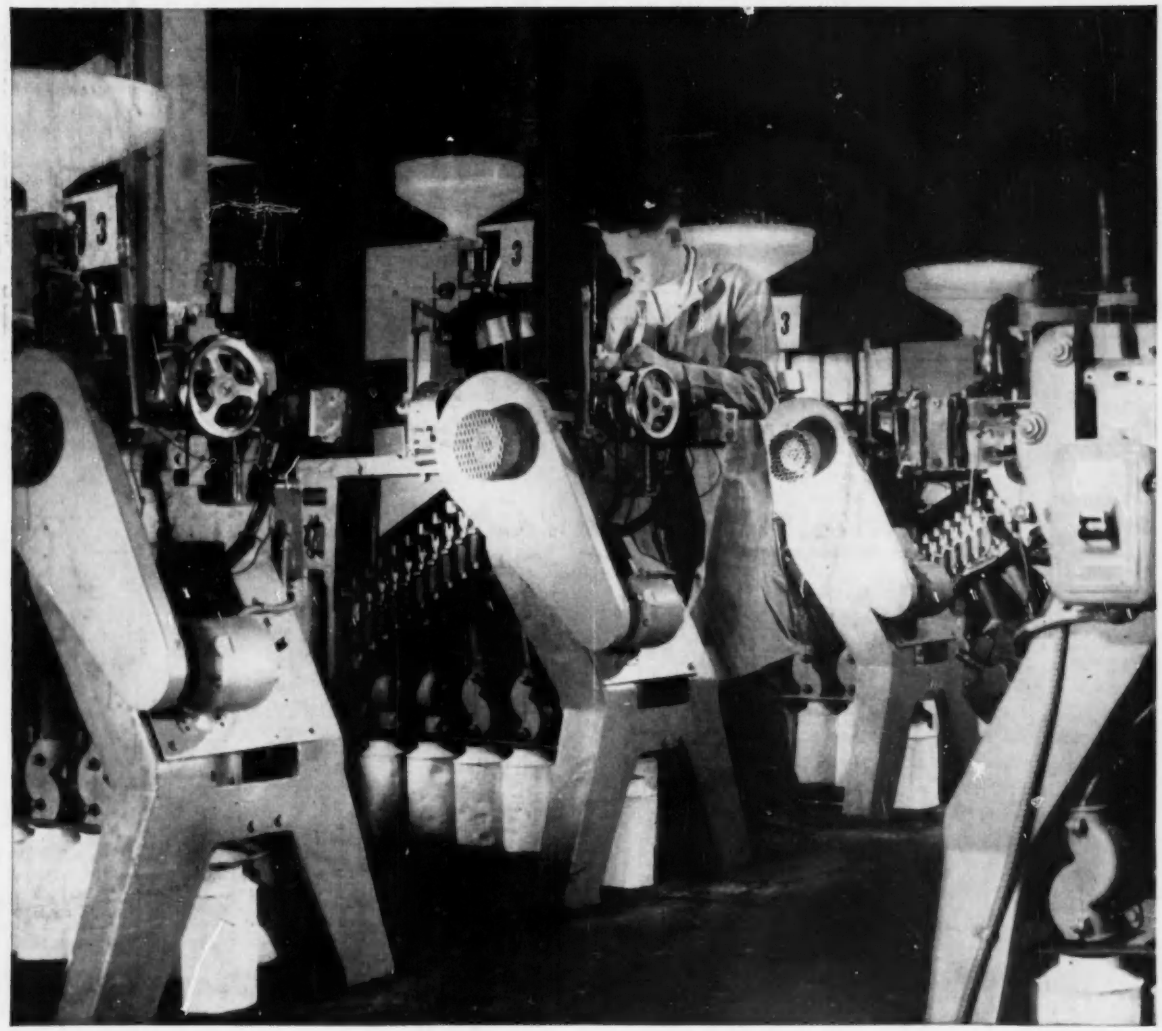
# In each and every bearing, we match rollers to almost microscopic limits

NOT satisfied to finish rollers to extremely close tolerances, Timken Company engineers designed the special machines you see pictured below. They sort rollers into even more precise sub-sizes so we can match the rollers in *each* and *every* bearing to almost microscopic limits. Result: each roller carries the same load, assuring quieter operation, longer life.

This is typical of the many extra steps we take to give you more for your money than any other bearing manufacturer. In fact, only with Timken® bearings do you get *all* these advantages: advanced design, precision manufacture, rigid quality control, special analysis Timken steels. The end result is that every Timken bearing insures longer life, reduces friction and cuts maintenance costs to a minimum.

Whether you're buying or building machinery, specify Timken bearings. Or if you're replacing bearings, insist on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

*This symbol on a product means its bearings are the best.*



**TIMKEN**

TRADE-MARK REG. U. S. PAT. OFF.

***TAPERED ROLLER BEARINGS***

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭

BEARING TAKES RADIAL ▯ AND THRUST ↔ ▯ LOADS OR ANY COMBINATION